The OIL WEEKLY

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PREFORMED
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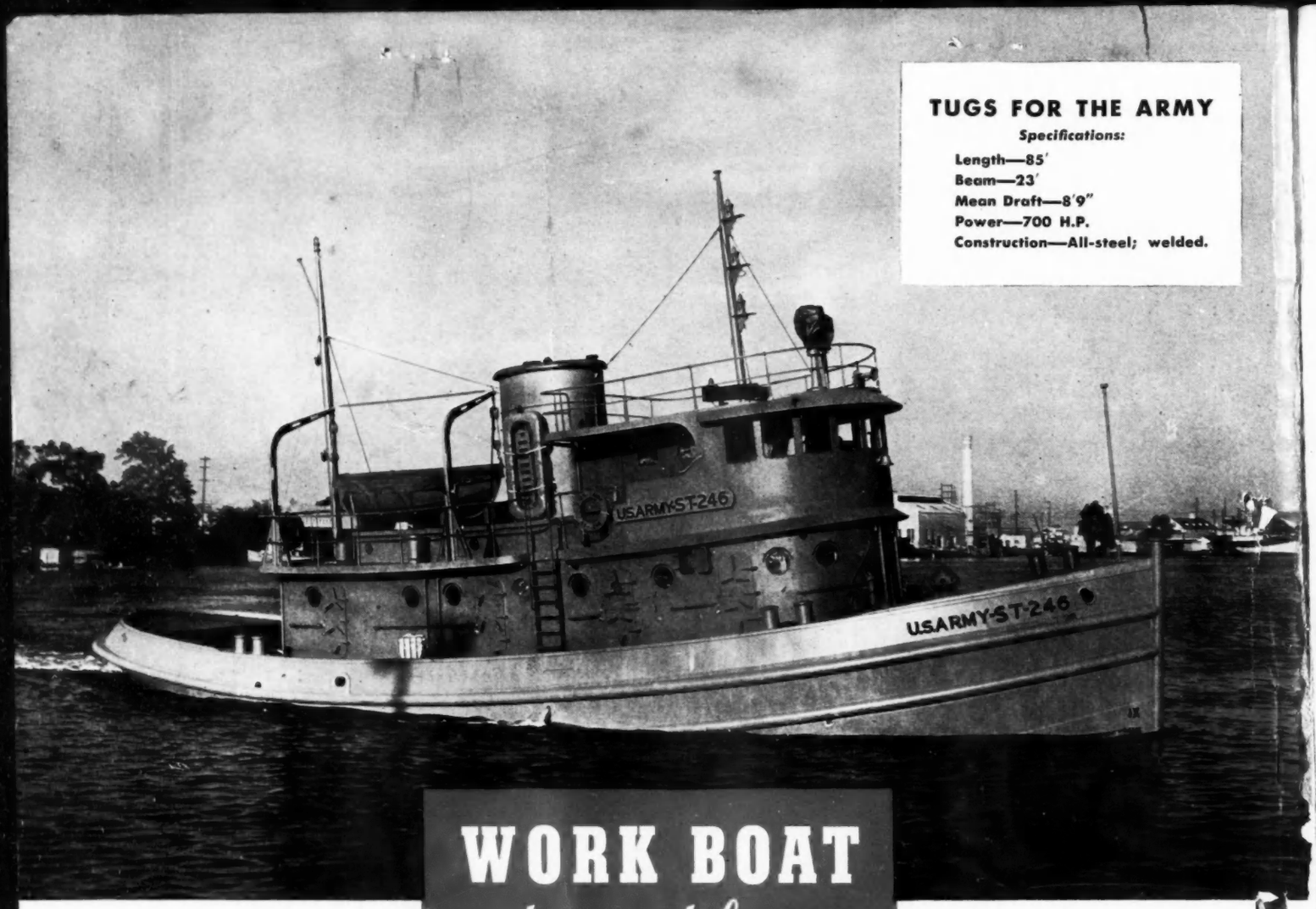

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Specifications:

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Mean Draft—8′9″
Power—700 H.P.
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IN EVERY ACTIVE OIL FIELD THROUGHOUT THE WORLD . . . . .

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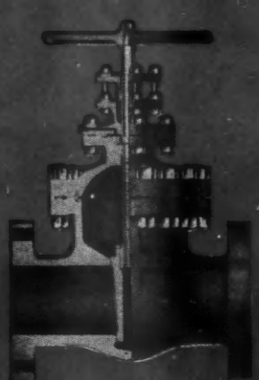

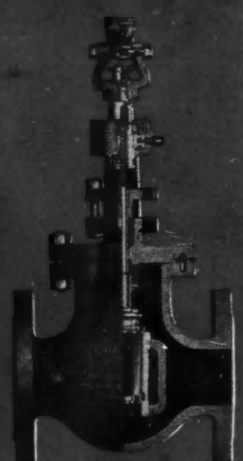

Behind Kerotest valves are MASTER DESIGNERS—tops in their profession, but they too have acquired a new "Know How" from the incredible advances in speed, new materials, precision and fabrication methods so necessary to meet the rigid demands of *America at War.*

Today, Kerotest energies and greatly enlarged facilities are devoted to the task of winning the war. Tomorrow out of this vast experience will come amazing improvements in design and construction that will have telling effects in the Oil Field industry. When the *March to Victory* is over, Time Tested and Approved Kerotest Valves, plus, this new "Know How" will mean even greater dependability and leadership in performance.

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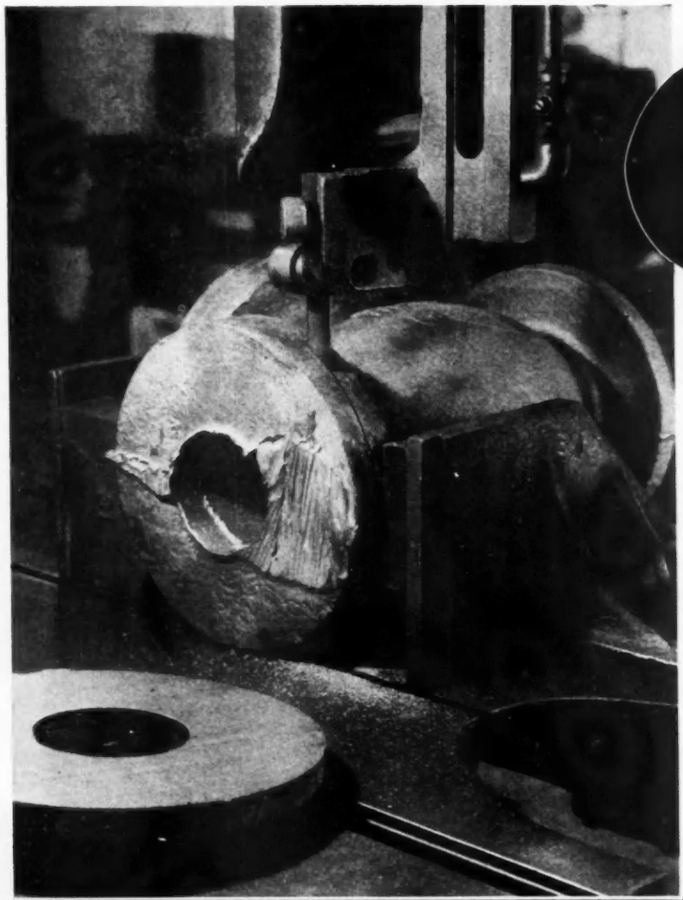

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TO DETERMINE THEIR SOUNDNESS

Another Method of Proving Top Quality in TESCO STEEL

By the destructive test . . . sawing rough castings apart . . . TESCO metallurgists are permitted a close-up study of the internal structure of the steel. This is just one of several methods of testing steel quality in our physical laboratory . . . the finest science has to offer.

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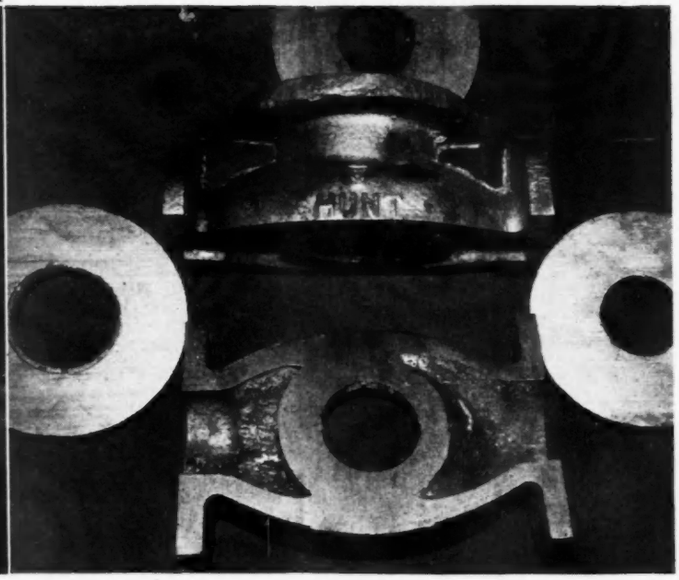
GOOD CASTINGS TESCO CARBON AND ALLOY STEEL HOUSTON, TEXAS



The TESCO Hallmark is the symbol of Quality in industry today

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255 TON CAPACITY

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This strong traveling block is the outgrowth of Gumbo Buster experience gained through building and continuously improving traveling blocks since the turn of the century. Into it is built the strength to drill today's deepest wells. Its design, material and construction combine all of the desirable features found in modern traveling blocks.

The Gumbo Buster 8-46N Traveling Block provides these valuable features:

1. 255 ton capacity.
2. 4 or 5 Manganese steel sheaves 46" diameter. Rope grooves ground to A.P.I. specifications for 1⅛" or 1¼" wire rope.
3. Sheaves rotate on large roller bearings.
4. Built-in wire line guard that *does not* have to be removed to string up block.
5. Lower clevis swings to either side to form support for standing block upright.
6. Quickly and easily strung up.
7. Streamlined, with no projecting surfaces.

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Bulletin No. 33 gives complete specifications. Your new Composite Catalog, distributed soon, will carry detailed information on all Gumbo Buster equipment.

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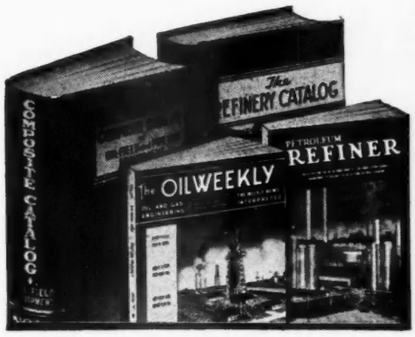

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for the drilling-producing-pipeline industry

PETROLEUM REFINER and The REFINERY CATALOG
for the refining-natural gasoline industry

☆

THE OIL WEEKLY

ENGINEERING • NEWS • STATISTICS

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Contents • December 6, 1943

Volume 112, No. 1

The Changing Panorama.....7

Technical and Feature Section:

Should the U. S. Government Go Into the Oil Business Anywhere?. 9
BY RAY L. DUDLEY

Ickes Outlines His Views on Government Oil Policy.....11

Frio Discovery in Old Salt Dome Field Is Major Strike.....12
BY DON L. CARROLL

Asphalt Lined Salt Water Piping Circumvents Corrosion.....14
BY ELTON STERRETT

Cycling Operations and Potential Use of Products.....16
BY JAMES E. PEW

Determining Propability of Success of Secondary-Recovery Operations, Part 2.....24
BY CHARLES R. FETTKE, PARKE A. DICKEY, DOUGLAS RODGERS, JR., PAUL D. TORREY, C. J. WILHELM

Wartime Fire Protection.....30
BY A. A. JERGINS

Practical Operating Hints for the Drilling Rig.....34

News and Departments:

Looking Ahead with the Editor.....7
Washington Roundup.....47
Markets, Statistics and Prices.....39
International Developments.....52
United States Field Operations.....55
United States Well Completions.....63
United States Wildcat Starts.....67
Squeaks from the Bull Wheel.....69
Notes for the Equipment Buyer and User.....70
Men in the Industry's News.....71
Index to Advertisers.....71

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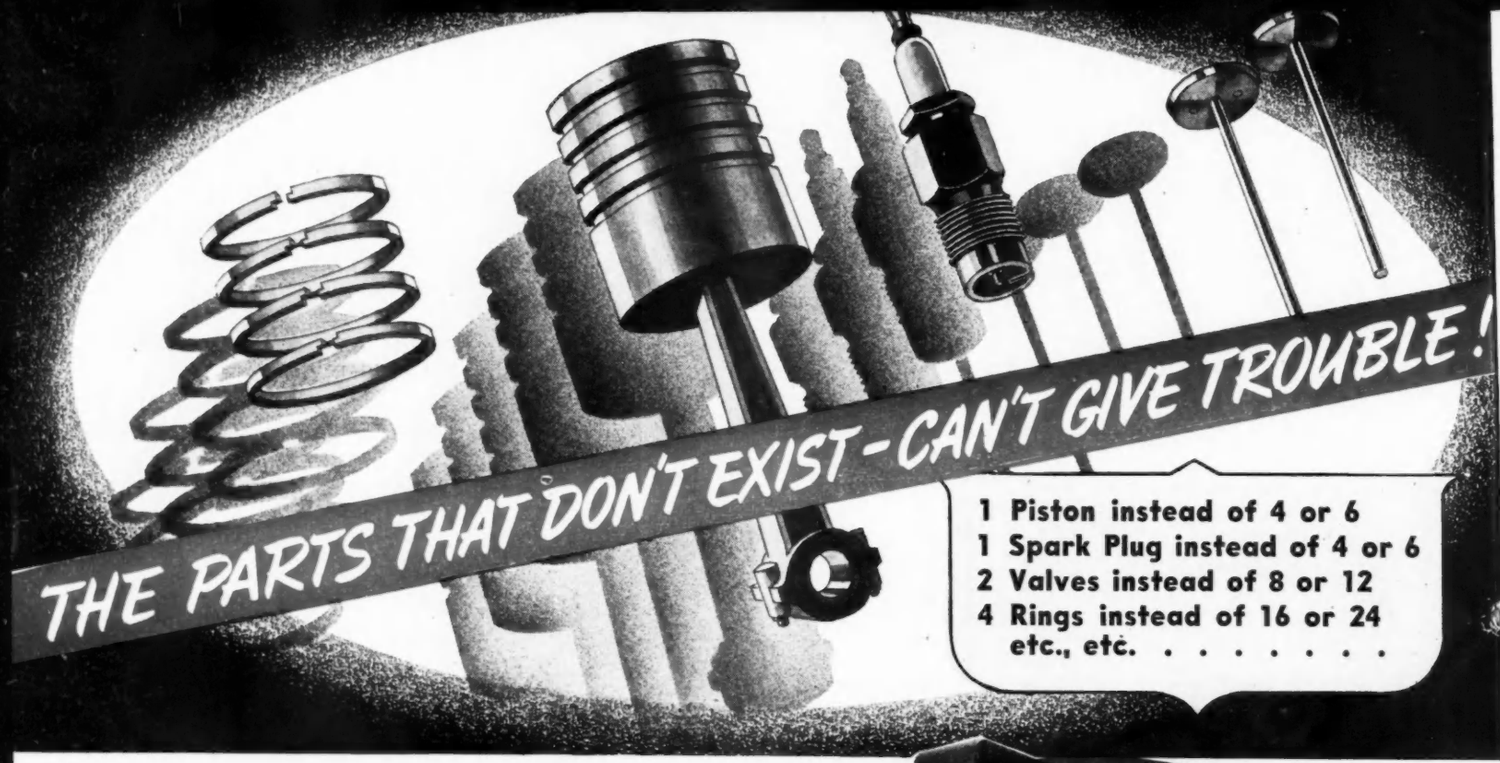
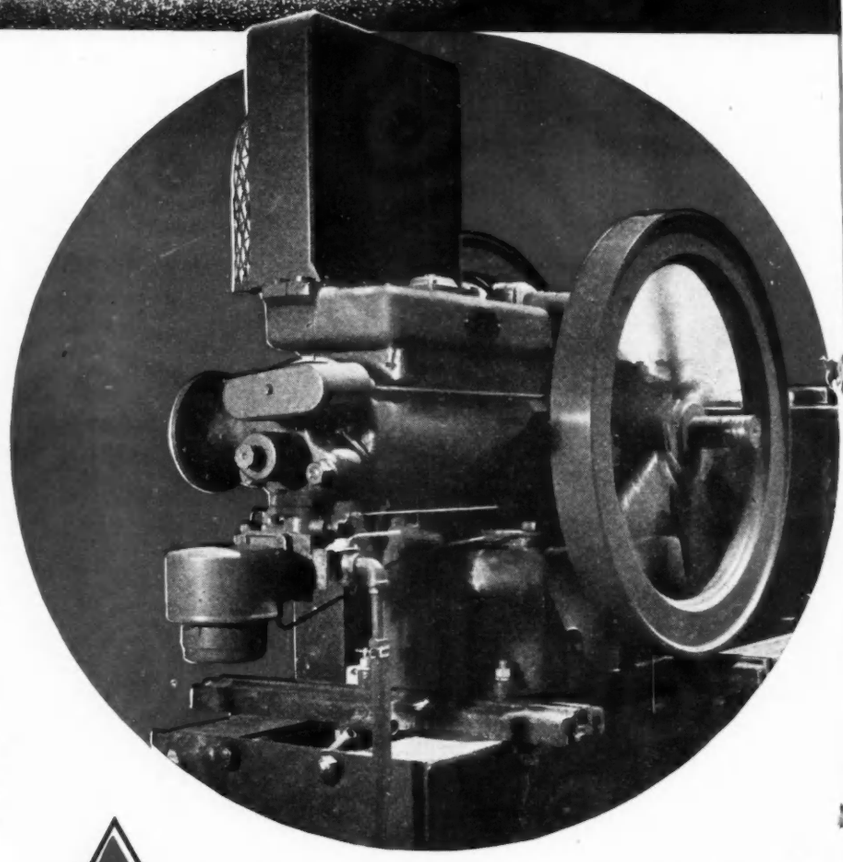

THE PARTS THAT DON'T EXIST - CAN'T GIVE TROUBLE!
1 Piston instead of 4 or 6
1 Spark Plug instead of 4 or 6
2 Valves instead of 8 or 12
4 Rings instead of 16 or 24
etc., etc. . . . . .

Replace with a

FAIRBANKS MORSE ZC ENGINE



Simple arithmetic is proof enough that maintenance and repair costs of an engine are in direct proportion to the number of its parts. *The parts that don't exist can't give trouble.*

With all parts readily accessible, service and repair of a Fairbanks-Morse ZC Engine is reduced to a "*simple field service job.*" There are no oil pumps, water pumps, thermostats or radiator hose to maintain—reducing maintenance to its simplest form.

Check the repair cost of your present engine—for a few dollars more you can probably enjoy the trouble-free economy of a Fairbanks-Morse ZC Engine.

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SERVING THE OIL AND GAS INDUSTRIES

The Changing Panorama

Form 37 Should Be Filled Out Quickly

IF THE industry is to put itself into a position where it can fulfill the enlarged drilling program planned for 1944, it is extremely important that PAW Form 37 be filled out as accurately as possible and sent promptly to PAW at Washington by all drilling contractors and production operators now operating rotary rigs or who contemplate placing any rotary rigs in operation during 1944.

This form, which has been mailed to contractors and operators by PAW, requests the number of rigs in operation and estimates of the amount of machinery and parts that will be needed for replacements during the first half of the year and also the last half of the year. Some machinery items, especially engines, boilers and swivels, are critically short of needs, and unless these forms are received immediately it will be impossible for PAW to obtain steel allocations and to schedule manufacturing programs that will provide the amounts that will be needed.

Any operator or contractor who has not received copies of the form should immediately obtain a copy of PAW Form 37 from a district office of PAW.

Illinois Man Offers Non-Subsidy Plan

A DOUBLE-BARRELLED plan to stimulate wildcat exploration and relieve producers, without resorting to a system of subsidized rebates, has been put forward by E. F. Benchoff, of Salem, Illinois, who has submitted details of his idea to Administrator Ickes.

His plan calls for the allowance of 50 percent depletion on all oil produced for the duration from wells completed after an agreed date. This depletion allowance would apply on working interest only, not royalty, inasmuch as working interest alone is responsible for new discovery and development.

"By this method it is entirely a tax matter," Benchoff explained in his letter to Ickes. "Working interests would be required to have certified records on well completions after a specified date, for the Treasury Department, to be handled as other income tax matters, with usual penalties for fraud.

"This plan—the 'exploration development plan'—will benefit new wells without equal benefit to owners of wells already drilled or to owners of crude that is imported and in storage. Those who drill new wells will be helped.

"The plan allows the producer of new oil a price increase by an additional 22½ percent depletion allowance, in proportion only to the amount of new oil produced. No continuous correspondence, supervision, regimentation or bookkeeping with the government would be necessary."

Benchoff pointed out that his plan does not call for an increase in purchase price by refiners, or the prices of refined products sold to consumers, and that it would therefore do away completely with the "untold detail that a crude-oil-price advance would involve."

The author of the plan argues that the additional depletion allowance would have the effect of an increase in price for new oil amounting to approximately 31 cents in Illinois, where the posted price is $1.37 per barrel, and that it would furnish an incentive to the larger producers to develop their best leases to the utmost.

"To those producers in the excess-profits bracket, particularly, the added allowance would be much more advantageous than a price increase, the net income of which would be taxed at 90 percent. The added allowance would be non-taxable."

Admittedly, this plan would give no relief to stripper-well owners or to operators of secondary-recovery projects, matters of prime importance in the oil picture, and Benchoff makes no claim that it is a cure-all for the economic ills of the industry.

House Price Bill on Floor Next Week

PROSPECTS are that the Disney Bill (H.R.2887) will be called to the House floor for action on December 13. This date is indicated by usual House procedure.

The Disney Bill is the measure that would provide for petroleum price schedules to be raised to not less than the average index of all commodities as reported periodically by the Bureau of Labor Statistics, and for transferring petroleum price functions from OPA to PAW.

Favorable consideration is indicated by the fact that more than 218 representatives signed a petition to call the bill out of the Banking and Currency Committee, which had shown no disposition to act. This number represents more than two thirds of the members actually present in recent days. Seventy-one of the representatives who signed are from states which produce either no petroleum at all or, as in the cases of Tennessee, Missouri and Utah, amounts so small that they may almost be classed as non-producing. The division of the petition signers according to political party was: Democrats 70; Republicans 148.

Senator Urges Foreign Policy of Supporting Private Oil Firms

THE United States government should adopt a policy of supporting American companies in their efforts to develop foreign oil reserves instead of embarking upon government exploration and exploitation of foreign reserves, Senator Ralph O. Brewster of Maine asserted last week in calling upon the administration to adopt a definite policy with respect to foreign oil.

Speaking in Baltimore on December 1, Brewster, one of the "five innocents abroad" who recently made a tour of world battle-fronts, declared that oil will be as important in the winning of peace as in the winning of the war and predicted that United States requirements after the war will be unprecedented and will not be much lower than at present.

"Either the United States must get access to more petroleum reserves or must eventually restrict its own consumption," he said after pointing out that expert opinion indicates the world has about 110 billion barrels of oil reserves, of which the Axis have approximately 10 billion, Russia 40 billion, the United States 35 billion with half of this within its own borders, and Britain, in cooperation with the Dutch, nearly 24 billion barrels.

The Senator suggested three courses as being open to the government:

1. "Continue the present haphazard situation with confusion among the various government departments concerned and with a policy which seems to promise the exhaustion of our petroleum reserves within another 20 years."

2. "The government to go into the oil business in foreign countries either entirely on its own account or in partnership with private companies."

3. "Adopt a petroleum policy which

encourages private American oil companies to expand interests in foreign fields and to give them the support that is requisite on the diplomatic front."

The last course, Brewster said "Recognizes the supreme importance of petroleum in the post-war world" and "pays proper tribute to the genius which has developed the greatest petroleum industry of the United States during the last half century.

"Such a course corrects the failure of the United States government in the last two decades to take a course that was calculated to protect and preserve the vital concern of America with petroleum.

"Before embarking upon government exploration and exploitation of foreign oil reserves with all its fearsome implications in foreign policy, it would seem far better to support American companies abroad in their endeavors to acquire and develop world oil reserves and world markets.

"What the petroleum industry has done for America in peace and war it may now do for the world in peace as well as war."

West Coast Gasoline Situation Critical

CIVILIANS on the West Coast were told last week that the gasoline situation was critical and would probably get worse. This message appeared in full page newspaper advertisements of the California Oil & Gas Association.

The public was told it might as well face the facts, which were that although the Pacific Coast petroleum industry was turning out 30 percent more gasoline today than it did in 1940, a shortage is in prospect. The ad explained the situation in these words:

"Military and export took 14 out of every 100 barrels of gasoline produced in 1940. That left 86 barrels for civilian use on the Pacific Coast.

"We increased gasoline production in 1942 to 11 percent above 1940. That meant we were making 111 barrels for every 100 we made in 1940. So while the Armed Forces took 27 out of every 111 (24 percent) it still left 84 barrels for civilian use.

"In 1943, we increased gasoline production to 30 percent above 1940. But the Armed Forces now take over 50 percent of the gasoline we make. That leaves less than 65 barrels out of every 130 for civilian use—24 percent below our normal consumption of 86 barrels."

The ad also explained that while private automobiles are driving fewer miles the West Coast has a lot more people than in 1940, and consequently civilian gasoline consumption was only 4½ percent below 1940. The only reason, the ad went on, "we've been able to carry on at our present rate of consumption this year is because a great deal of the gasoline we are using now is coming from supplies—accumulated by the industry in the past. At the present rate of consumption, these surplus stocks will be gone in two months."

Synthetic Rubber To Win on Its Merits

WITH synthetic rubber plants now coming into operation on a scale that promises the objective of the government rubber program (800,000 tons per year) will be reached next year, the controversy over whether this new industry is here to stay has been revived.

President Roosevelt and Vice President Wallace have spoken against a tariff on natural rubber following the war. Others urge a tariff to protect the synthetic-rubber industry that has been constructed.

However, the real issue is whether the synthetic has sufficient merit of its own to justify its continued production. This is the consideration that should have the greatest bearing on this matter. Without government interference, the battle between natural and synthetic rubber will adjust itself to the best advantage of all.

Experience of rubber manufacturers shows that man-made rubber is performing better services today in many instances than the natural product. This is particularly true where rubber products must come in contact with oil, acids, detergents and similar materials. Resistance to such materials is an outstanding superiority of synthetics over natural rubber, for the latter has a tendency to swell and disintegrate under such conditions, whereas the effect on synthetics is said to be imperceptible. Superior resistance to abrasion is another property which may be obtained with synthetics. The matter of resistance to effects of heat is also significant.

These advantages indicate that synthetic rubber will continue to be used, regardless of tariff. Any individual who regards synthetic rubber as a temporary substitute is speaking without knowledge of these facts. Furthermore, it should be borne in mind that the significance and possibilities of the synthetics have only begun to be realized. Synthetic rubber is being used for many installations for which natural rubber was never considered. Many new types of synthetics are being developed. On its merits synthetic rubber is here to stay, perhaps not as a full substitute for the natural product, but at least for many purposes. Whether it stays as a companion of natural rubber or as a full substitute is beside the point. Let service performance, not politics, determine this question.

Oil Is Ammunition

Airplanes require 50 gallons of gasoline per hour per motor. A 4-motor plane requires 200 gallons (5 barrels) per hour. Since the average production of oil wells in the United States is 10 barrels per day, and over 4 barrels of oil are needed to make 1 barrel of gasoline, it requires the 24-hour output of 2 average oil wells to keep one 4-motor bomber flying but 1 hour a day.

Willkie Not Interested In Wealthy Oil Men

WENDELL L. WILLKIE, avowed candidate for the Republican presidential nomination, came to the oil country last week and promptly tangled with an independent oil man and then told the world, through reporters that he was not interested in wealthy oil men's support—he was for the common man! It all started some time ago when Roy Cullen, independent oil man, and a former Willkie supporter, wrote Willkie a letter, following receipt of an autographed copy of Willkie's "One World," and criticized some of Willkie's ideas on international policy and recommended that he become more specific on certain domestic policies. When Willkie came to Houston reporters queried him about Cullen's letter. "Who is this man Cullen?" asked Willkie. "I never heard of him," and then proceeded to say that he presumed he was somebody who had struck a gusher and thought that that made him a world authority. Reporters then queried Cullen and he showed them two letters from Willkie beginning "Dear Roy," and one of them solicitous of the health of Cullen who had been in a hospital. In two speeches in Houston Willkie referred to people who strike gushers and think that it gives them international knowledge.

A wisecrack of the week on the subject: "Cullen made a liar out of Willkie but Wendell needed no help to make an ass of himself." General consensus of opinion, Willkie would have been better off if he had not come to Texas.

Should the U. S. Government Go into the Oil Business Anywhere?

Petroleum Reserve Corporation is all set and ready to acquire oil production in foreign fields, but a survey shows that there are few spots where it might horn in—and the one country where this government would be welcome offers also a dangerous political development

By RAY L. DUDLEY
Publisher

SHOULD the United States government engage in the oil business as a producer, transporter, refiner or distributor, except in cases of dire emergency in time of war? Should the United States government become a partner with American or foreign capital in the oil business anywhere?

The American people, if one may judge from recent political happenings, are becoming more and more decided in their opposition to the trend toward a socialized state, and public opinion, despite utterances by Secretary Ickes and other administration spokesmen, will likely demand a continuation of, or a return to, private enterprise here at home.

But what about the situation abroad?

The creation of Petroleum Reserve Corporation by President Roosevelt last summer has led to a great deal of speculation as to just what may happen outside the United States.

First it might be well to review the charter of Petroleum Reserve Corporation. Of course anything founded upon a presidential edict can change its base upon further presidential edicts, but the Congress is more and more reclaiming those rights and duties it gave up so willingly during the first several years of the present administration's life.

The charter of PRC outlines its objects and purposes as follows:

"To buy or otherwise acquire reserves of crude petroleum from sources outside the United States, including the purchase or acquisition of stock in corporations owning such reserves or interests therein, and to store, transport, produce, process, manufacture, sell, market and otherwise dispose of such crude petroleum and the products derived therefrom; and the corporation shall have the power and authority to do and perform all acts and things whatsoever necessary thereto, including, but without limitation, the power to borrow money and issue its secured or unsecured obligations therefor; to adopt and use a corporate seal; to make contracts; to sue and be sued; and to construct and operate outside the United States such refineries, pipe lines, storage tanks and other facilities as are necessary in connection with carrying out the objects and purposes of the corporation as above stated."

The capital stock of the corporation is set at $1,000,000, all to be held by the government.

Thus, specifically, PRC is limited to foreign areas in its operation—at this time.

Now let us consider what foreign areas it might logically seek as its field.

North America: Our government, through the Army, has spent a large amount of money in what is termed the Canol project, in Canada. But our government is under agreement to return the Canadian properties to the Canadian government upon payment of a sum, to be agreed upon, at some time in the future, so the properties on which we have already spent $134,000,000 will not be included in reserves on which PRC might otherwise count. This is rather ironical, if PRC is really out to help solve our petroleum reserve problem, and it shows the ineptness of government in business.

Mexico and Central America: Practically all Latin American republics have either laws or constitutional provisions which prohibit a foreign government's interest in their mineral resources.

South America: We know of no South American republic which does not have legal provision prohibiting a foreign government's ownership in its mineral resources and the provisions are tight enough to prohibit ownership in such a country of oil rights even by a company in which a foreign government owns shares. Anglo-Iranian Oil Company, due to the fact that the British government owns a substantial interest in it, has been turned out of South America.

The Near East: Saudi Arabia is one country where our government would be welcomed as a partner with any company operating there. More about that later.

Europe: It appears highly unlikely that with the oil industry already developed to the extent it has been, our government would be interested, or property holders in European countries would be interested in receiving more than financial aid from the United States government.

Iraq-Iran: We are not so sure about Iraq, or Iran. We suspect that the particular party which might be in power might determine the welcome our government might receive as a partner. We shall touch on this entire Near East question in other paragraphs.

Asia: China will see development in the future—and what might happen there is problematical, but reserves in China would be of no benefit to the American people. Burma, too, offers little of interest, even to an impractical dreamer, in the way of reserves not

already firmly in the hands of British investors.

Netherlands Dutch Indies and New Guinea: Proven properties in the Netherlands East Indies and New Guinea are already in the hands of private investors, or were before the Japs took them. New Guinea, with proven production, might offer something of interest to Petroleum Reserve Corporation, as much of this great island still awaits exploration. Some of the islands on which we have been engaged in combat with the Japanese, may also offer opportunities.

Thus, in summing up the areas where Petroleum Reserve Corporation might possibly operate, we find only the Near East and the Netherland East Indies and New Guinea as possible points of interest.

There seems to be reason to believe that some sort of overtures have been made to the British government for a share of that government's interest in Anglo-Iranian Oil Company, which has large proven reserves and production in Iran (Persia). The story of how the British government became involved in Persian oil affairs is a most interesting one, and as it is reviewed, it was not an illogical procedure. Need for a petroleum reserve for the British navy, coupled with certain political considerations, which, if not well known, should not be discussed at this moment, made the entry of the British government into Persia appear very advisable. The story of the famous D'Arcy concession (which covers the properties of Anglo-Iranian Oil Company) is a fascinating one, and it emphasizes some of the differences between the attitude of British government and American government. Although the British government owns control of Anglo-Iranian Oil Company, and therefore has plenty of power to interfere with its management, this has not occurred because between British government and British industry there has been the closest cooperation. The oil men on Anglo-Iranian Oil Company's board have operated the company.

It is our understanding that the British government has not enthusiastically welcomed our overtures which may have been offered by our government looking toward our receiving a substantial portion of the British government's shares in Anglo-Iranian Oil Company. If we have made such overtures and they met with no welcome, such attitude on the part of the British would certainly be understandable.

It is our further understanding that the British government has made certain counter proffers to return lend-lease oil, in kind, barrel for barrel, after the war. We do not offer this as a verified fact. We do know that Secretary Ickes in an article in a current magazine is suggesting that the British pay us back in kind. We have an idea that the secretary is asking for something which may already have been offered!

The Saudi Arabia deal proposed by the American government to California Arabian Standard Oil Company (Standard Oil Company of California and The Texas Company) seems to have fallen through. Originally the American government wanted control of the properties in return for investing in the company an amount equivalent to one half of the money spent by the company in developing the Saudi Arabian reserves. No consideration was taken of the value of the properties resulting from discovery of oil and development. Such a proposal was so obviously unfair that it was immediately turned down by the companies. As one person expressed it, if California Arabian Standard Oil Company had spent a billion dollars in developing the reserve, our government would not have been keen to match the sum for a half interest. Further negotiations resulted in the government's expressed willingness to take a lesser interest than control. However, part of the consideration was to have been the erection of a large refinery. This refinery would have been much larger than California Arabian Standard Oil Company would logically have built as a commercial proposition, and it would have specialized on certain products to an extent that no oil company would have so specialized. In other words, it would have been largely a war plant and its value from a commercial basis would not have been commensurate with its cost, in peace-times.

Whether or not negotiations will be resumed is to us a matter of conjecture. Shiek Ibn Saud of Saudi Arabia is reported greatly in favor of the American government becoming a partner in Saudi Arabian oil operations. The reasons are apparent. The astute Shiek, one of the strongest men Arabia has known for a century, wants such protection as partnership with the American government would afford. He has carved his kingdom out by methods common to this section of the world, but his death could unleash trouble aplenty. There are many who believe that if our government become a partner the matter of national honor might well become involved at a later date, and that partnership by the American government might easily mean a ticket to another war.

No one, for one minute, will say that reserves developed in Saudi Arabia could be successfully defended against any first class European or Asiatic power in the event of another war. In other words, as war reserves they would have no value to us.

The same thing would apply to Iranian reserves.

Why, then, is Petroleum Reserve Corporation so hot on Saudi Arabia and Iran? We think that the magnitude of the reserves has tempered the thinking of those in charge. Less than a year ago the reserves in the Near East, Iraq, Iran and Saudi Arabia were named at nineteen billion barrels. Today they are figured at thirty billion barrels. We do not know what has pushed them up so highly during the interim, unless a closer study or some new development, of which we have no knowledge, has done so. But it is a fact that one hears the figure "thirty billion barrels" regularly in connection with these Near East reserves . . . and that is 50 percent more than the entire proven reserves of the United States at this time. Also, it may be said that possibility of further discoveries are regarded as certain.

As peacetime reserves, Saudi Arabia, in the hands of an American company, would be indeed a solace to the American people and our government should do all it can possibly do to encourage the ownership and development. But to become a partner opens up possibilities which we believe the United States Senate will find most interesting.

That something needs to be done to protect the interest of the American motorist in his gasoline supply, and to protect our armed forces in time of emergency goes without saying. But it is not necessary for the American government to be a partner. Look at the Canol mess right now . . . that is a pretty current sample of government in the oil business.

The oil industry, however, can find little consolation in a situation where some administration officials (let us exempt the State Department from this statement) are running off into dark corners like children playing a new game, and with the one avowed Republican candidate for the presidential nomination (Willkie) seeking to win votes on a demogogic platform of lining up oil men as against the "common people."

What can be done by a socialistically inclined government in an "emergency" is a marvelous thing to see. And what constitutes an "emergency" is equally marvelous. On this phase of the subject alone pages could be written.

On the other side of the ledger is the apparent swing of the country away from government ownership and regimentation, plus the knowledge which even a youth can gain from what he has seen of the waste of money by the government—government entry into the oil business would not mean lower costs of petroleum products.

Ickes Outlines His Views on Government Oil Policy

TO AVERT future national catastrophe because of exhaustion of dwindling supplies of petroleum, the United States must without delay go all-out in the production of petroleum substitutes from coal and shale, should demand repayment after the war of every barrel of oil she has supplied to her allies, and should encourage development of foreign oil fields by investing government money in oil companies controlled by her nationals. These, in the opinion of Petroleum Administrator Harold L. Ickes, should be the basis for a post-war national oil policy of the United States government. Ickes also feels that as a world-peace measure, the United Nations should control the world's oil resources and ration oil to other nations. He sets these views out in a signed article that appeared in *Collier's Weekly* of December 4, and in another signed article that will be published in the forthcoming issue of *American Magazine*.

In both articles Ickes disclaims any thoughts of wanting the government to go into the oil business, and promises that he desires to make it easier for private capital.

In both articles, Ickes also points out that while America's oil reserves are equivalent to 12 or 13 years' requirements at prewar consumption rates, that it will take much longer to produce them, and that consequently the country is facing an oil shortage now.

Substitute Fuel Program

"At the risk of being called a scarcity-monger, or something even worse, I insist that we must proceed without further delay to produce gasoline from coal and shale," Ickes writes in his article on substitute petroleum sources in *Collier's*. "I predict that we may live to see the end of the gasoline age unless we tackle the job objectively."

Ickes then points out that while natural petroleum resources of the country are dwindling rapidly, that the nation is blessed with a vast quantity of coal and shale from which oil can be extracted. He warns that other countries are far ahead of the United States in the manufacture of substitute petroleum. He writes:

"The vast coal resources of the United States have been scarcely scratched and we can count about three trillion tons still in the ground. It is estimated that this much coal could provide 1½ billion gallons of synthetic liquid fuel each year for 1000 years and still leave enough coal for all other present day purposes. We have oil-shale deposits, principally in the Rocky Mountain states, estimated to contain 92 billion barrels of crude oil—enough to supply all our needs for 65 years."

While giving assurance that "there will be no suspension of efforts to find and to develop new oil fields," the Petroleum Administrator stresses the urgency of expanding the small-scale experiments in hydrogenation of coal started eight years ago. He tells the public that his department is seeking $100,000,000 from Congress to build and operate demonstration plants for producing, on a small commercial scale, gasoline and oil from coal and shale because "if we were ever to be called upon, with or without allies, to fight another world war, we could not supply ourselves with the gasoline needed to win it.

"Let me say here that the government has no intention of competing with our domestic oil industry," declares Ickes. "What we plan to do is in the national interest. As soon as we find out all there is to know about the hydrogenation of coal and the extraction of oil from shale, that knowledge will be made available to private industry."

Because of the uncertainties involved "it is unlikely that private capital will venture on any large scale into a new and untried industry, no matter how bright the prospects may be," says Ickes and adds:

"We do not promise to make synthetic gasoline more cheaply than that refined from crude oil. We do promise to blaze the path now for private capital to do a job later, when it becomes a question of synthetic liquid fuel or the end of the gasoline age."

Post-War National Policy

Because oil is so essential that the future security of the United States will depend upon her supply of oil, Ickes will warn in his forthcoming *American Magazine* articles that this country must rebuild its oil reserves.

It is in this article that he suggests the United States should demand repayment after the war of all oil supplied to her allies, barrel for barrel, so as to partially offset the terrific drain on her once fabulously large petroleum reserves in acting during the war as the oil depot for the United Nations.

"I believe it will be shown ultimately that we are putting up 95 percent of the aviation gasoline," Ickes writes, "which is being used to blast the Hitlers and Tojos from their strongholds and the Quislings from their burrows.

"In view of the alarming rate at which our petroleum position has been weakened," he continues, "it has been suggested in some quarters that it might help to balance our petroleum budget if, at the end of hostilities, we were to be reimbursed in kind from reserves which have not taken the punishment that our own have. Repayment in kind would ease the pressure, which is certain to increase as known reserves decrease and demand shows no signs of falling off."

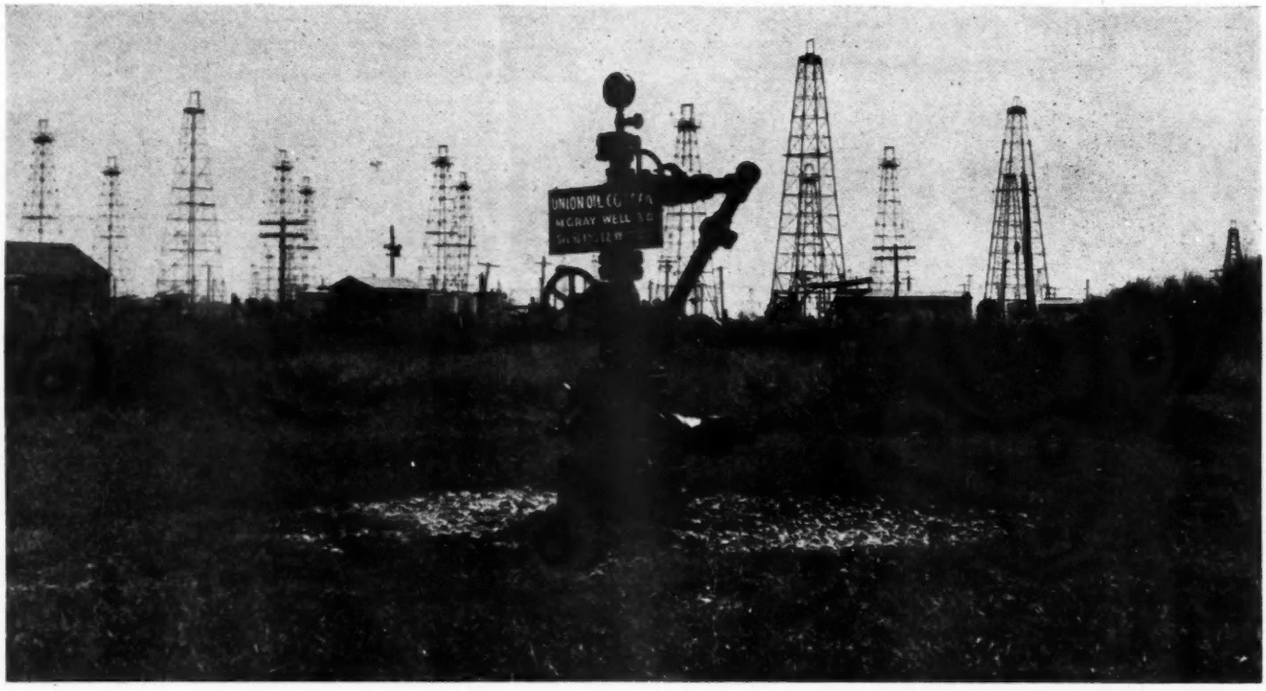
Administrator Ickes then makes his other two suggestions for averting exhaustion of America's oil resources and for safeguarding future world peace:

First, he declares, the United Nations should control the world's oil resources and ration oil to other nations, giving the "brutal and uncivilized nations" only enough for peaceful pursuits. "One of the greatest safeguards of the peace," says Ickes, "would be for the peace-loving nations to face the future with oil enough both for peace and for war, while the brutal and uncivilized nations would be permitted to have oil only for current needs."

Ickes then, as a final suggestion proposes that the United States should follow the example of Great Britain and encourage the development of foreign oil fields by investing government money in oil companies controlled by her own nationals.

Again disclaiming that he wants our government to go into the oil business, Ickes contends that we should study the "working arrangement which exists between the British government and the British oil industry, and then adopt the democratic features of that relationship to our own situation.

"Great Britain has been much smarter and more forehanded than the United States in acquiring oil reserves in all parts of the globe," he asserts.



Union Oil Company of California's Gray 3-G, Section 33-10s-12w, Frio discovery well at Vinton, in Southwest Louisiana. Wells in background (looking south) are north flank Miocene producers.

Frio Discovery in Old Salt Dome Field Is Major Strike

New thick Frio pays found year ago may yield as much or more oil than old Vinton field has produced since 1910

By DON L. CARROLL, Staff Writer

WITH the threat of inadequate reserves being laid across the back of the oil industry like a whiplash, every effort is being made to locate new producing areas in virgin territory. This campaign of exploration is all to the good—from the standpoint of both current and future importance, for there is no economic or social limit to the amount of oil reserves that may be proved up against the needs of coming years. Even so, while extending the frontiers of oil production it is the essence of wisdom to search for and find every pay zone that may exist in fields that are already developed and provided with outlets.

There have been many examples of the rediscovery of oil fields, in which new pays have been tapped years after original or later discoveries and development. Not all have been as notable or spectacular as the finding of the biggest pay at Spindletop more than two decades after the historic first strike there; but the periodic rediscoveries within the Humble salt dome field have each made the headlines, and similar examples are numerous. One of the most recent and surprising is the opening of Frio production on the north flank of the Vinton dome, in Calcasieu Parish, Louisiana.

The Vinton field was opened commercially in 1910, but for many years previously local landowners had been drawing small quantities of oil from shallow 40-50 foot wells equipped with hand-operated pumps. These near-surface accumulations, no doubt, represented migratory oil trapped in sand lenses within the Beaumont clay—oil that had worked its way upward either because of permeability of the La Fayette beds below the clays, or through fault fissures extending down into the deeper Miocene beds that had been the source of oil from commercial wells in the field up to November, 1942, at which time Union Oil Company of California completed its first Frio well, to open up a series of Oligocene pays that appear to promise potential recovery of as much or more oil as the field has produced during all its previous exploitation, which amounts to approximately 46,000,000 barrels.

The Miocene zone that has always been the objective of east flank opera-

tions is apparently barren in most of the areas around the rest of the dome structure, except for a small area at the edge of the salt plug outline on the north side. Likewise, the Frio beds pinch out against the flanks of the dome and are absent from the section, except for their thick occurrence on the north flank, and the possible presence of basal Frio beds on the southeast flank, where Union Sulphur Company drilled 6 wells, getting 3 small producers, from a pay that is difficult to identify.

The discovery of positive Frio production on the north flank of the Vinton dome was a surprise to many geologists and operators, since it was believed that such a possibility had been explored thoroughly throughout the upper Gulf Coast region. It was the first important Frio strike since those at Fig Ridge and Stowell.

There is little reason to doubt that the new north flank Frio production is the first to be tapped in the field, since east flank Miocene wells are bottomed above the Anahuac shale (Discorbis zone), the top of which is the top of the Oligocene, according to Southeast Texas nomenclature. The south flank wells are believed to have been drilled to deeper horizons of possible Miocene age, but were plugged back to a higher pay. In any event, the thick Frio of the north flank was not present there.

The Frio discovery well of Union Oil Company was drilled only one location north of production from the Miocene. It came in on flow at 140 barrels, with 7/64-inch choke, yielding 35-gravity oil at a gas-oil ratio of 400:1. The electric log of the well showed a pay zone that included a net of 36 feet of oil sand and 263 feet of gas sand.

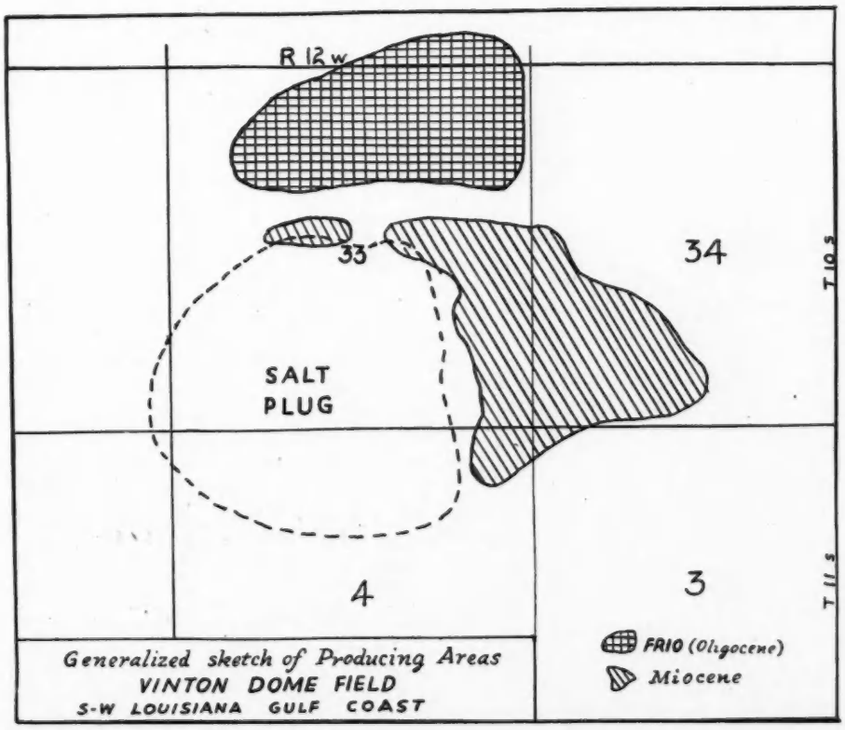
In the year since this original Frio discovery the company has drilled 14 more wells in its north flank lease block —all but one of them producers, and all penetrating thick Frio sections. The best of the 14 producers completed up to the middle of November, 1943, has more than 400 feet of saturated oil sand. Many of these wells show five separate pays in the section, varying slightly in thickness from well to well, but all lying below the shale of the Marginulina zone. This shale and the underlying sands are regarded as Miocene by many Louisiana geologists, but they are classified as Oligocene by most Texas geologists. The Frio pays at Vinton are topped at depths ranging from 4875 to 5781 feet; daily yields of the 14 wells are from 140 to 180 barrels, and choke sizes from 7/64- to 14/64-inch. The wells were held to allowables totaling 2219 barrels daily in November, but could be opened up for much greater production.

An unusual feature of the north-flank development is the width of the productive area, considering its location on the flank of a dome. There are three rows of wells on 10-acre spacing, so far, and there is ample reason to expect expansion farther northward with good results. The current outpost well has a plugged-back depth of 6055 feet, and is therefore pretty well down dip. Nevertheless, it is one of the best wells in the lease. The company is drilling 2 more wells as this is being written. Gulf Refining Company is about to complete a well on an adjoining lease some distance away from the salt plug, with every indication of success.

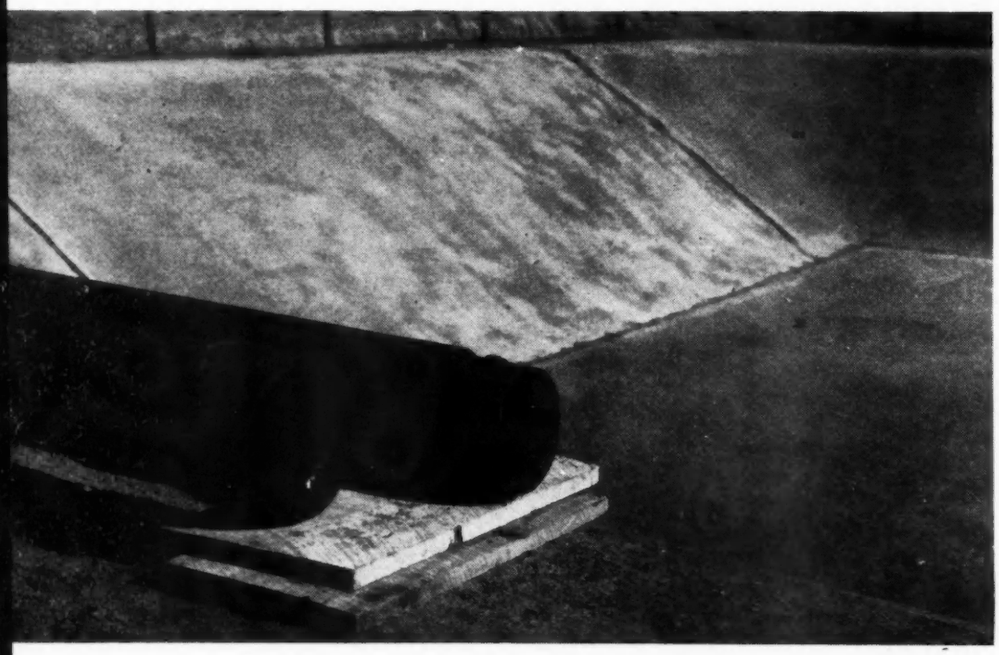
The north-flank Frio wells are being drilled and completed within three weeks' time, in spite of the fact that trouble is encountered in passing through the Frio-sand section into the Hackberry shale below. This shale, which is badly fractured and unusually ductile, heaves into the hole and has necessitated fishing jobs. Experience has now been gained, though, that will provide more future control, so that later wells can be bottomed almost at the base of the Frio, without tapping the Hackberry to make sure that the Frio section has been fully explored.

This same Hackberry shale is believed to be largely responsible for the absence of a Frio section in other parts of the structure, inasmuch as it appears to have been dragged up as a very thick sheath, plastering the sides of the salt column and pinching off overlying beds out on the flanks.

The importance of the new Frio production in the Vinton field is shown by the fact that Union Oil Company's wells account for the greatest individual company output at the present time. Operators of Miocene wells in the older producing areas of the field include: Nathan Pipe & Supply Company, The Texas Company, Union Sulphur Company, Vinton Petroleum Company, E. H. Robertson, Johnnie Savoie, Wilson-Broach Company, and W. N. Zinn.



Generalized sketch of Producing Areas
VINTON DOME FIELD
S-W LOUISIANA GULF COAST



Bell and spigot ends of two joints of asphalt-cement pipe, in which the interrupted-thread type of joint is utilized to secure proper register and closure of the junction between joints so as to insure fluid-tight seal while the joint is being filled with molten asphalt to insure rigidity and close all space between spigot and bell.

Asphalt Lined Salt Water Piping Circumvents Corrosion

Light-weight pipe containing little critical material utilizes hard-blown petroleum asphalt as an inner or corrosion-resistant liner and as outer strength skin

By ELTON STERRETT, Staff Writer

SOMETIMES almost as serious a problem as the production of the oil itself is the disposal of the salt water which, in many fields, must be produced if the oil is to be brought to the surface. In fields such as East Texas, with salt-water drive the force which is responsible for much of the production, not only must provision be made for handling the vast quantities of brine produced, but the bulk of the fluid must be returned to the producing horizon if oil is not to be needlessly lost.

The problem of handling salt water, in quantities and at pressures required for successful return to the sands, is greatly complicated by the extremely active corrosion which the fluid sets up in any iron or steel pipe included in the disposal system. The naturally active element in the brine is aided by the fact that many disposal plants require aerating of the fluid, as a means for disposing of entrained iron, and a portion of the bubbles thus formed remain trapped within the stream, carrying the necessary oxygen to permit the most active deterioration of ferrous pipe.

An interesting development to meet salt-water disposal demands involves the use of a petroleum product for giving the line pipe strength and high-corrosion resistance qualities. Asphalt cement, blown to give it body and to make it resistant to temperatures likely to be met in disposal lines, forms at once the inner corrosion-resisting lining of the pipe, and an outer skin which prevents electrolysis or external rusting.

The pipe is almost entirely built of non-critical materials. The backbone or center of each joint is formed from a strip of comparatively light gauge steel —26 to 32 gauge has been used in pipe so far manufactured—which is formed around a mandrel of the required diameter and flash-welded to form an oil-tight and uniformly strong tube. This tube is either slipped over a smaller mandrel, or the forming unit is contracted to allow a space between steel shell and mandrel, while a second adjustable sleeve, aligned concentrically with steel core and mandrel, provides outside annulus.

The pipe is formed by forcing hot asphalt, under pressure, into the annulus between inner mandrel and sheet steel core at the same time the annulus outside the reinforcing member is filled. When the mold is opened and the inner mandrel collapsed, there is formed a pipe with a thickness of 1 inch, inner and outer asphalt walls being uniform in thickness, and equal to ½ inch less ½ the thickness of the steel reinforcing sleeve.

This pipe, amply strong to stand handling on the usual oil-field truck without suffering serious deformation, withstands the shearing effect of backfill settlement without parting from the

steel shell. It does not become "cold short," and can be compounded of asphalt to meet any normal specifications of exterior heat.

Joining pipe made of asphalt is accomplished in a number of ways, depending upon the pressure to be carried, and also varying somewhat with the nature of the fluid to be transported.

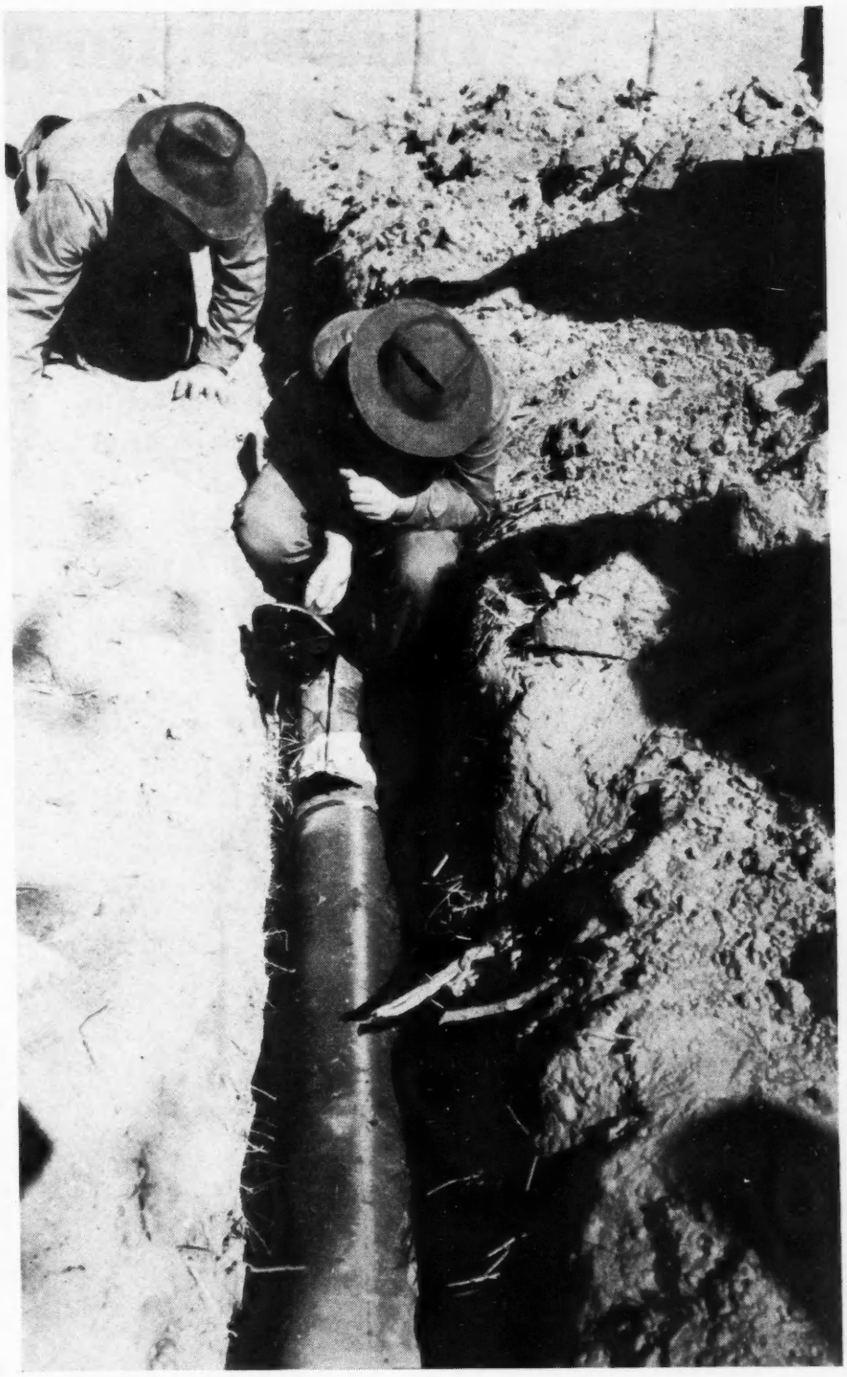
A type of bell-and-spigot joint, in which an interrupted or breech-block type of thread is welded to the steel sleeve and within the expanded portion of this sleeve included in the bell, permits the pipe to be set tight with a slight twist of each joint as it is added to the string already laid.

On this type of joint the straight end of the pipe is turned down or formed to present a sharp shoulder or bevel, at the outer edge or lip of the pipe end. This bevel interlocks with a corresponding recess formed at the base of the bell, so that when the pipe is turned the thread forces the bevel into the recess, making an effective liquid seal at that point. As this joint closes tightly, a shoulder on the outside of the pipe contacts the end of the bell, closing the joint there against leakage.

At one side of the spigot, and so laid in the ditch as to be on the top or uppermost portion of the joint, is a hole or vent, communicating with the space between spigot and bell except where occupied by the matching sections of the interrupted thread. Through this hole, the joint is poured full of high-melting-point asphalt, the molten material filling the space and not only sealing the joint, but also adding asphalt to strengthen the joint and give it lateral rigidity equal to or greater than that of the straight pipe wall.

Such a joint is, of course, permanent, and allows of no dismantling or reclamation of the line, once it is laid, screwed tight, and asphalted.

For lines which must be laid with a certain amount of flexibility included in the structure, clamp-type collar joints are used, in which asphalt-lined swage rings are used to clamp the plain spigot ends of adjacent joints of pipe. These collars, of the usual 2- or 4-bolt type, utilize the usual elastic sealing ring to effect fluid tightness, while the pipe strength itself is secured through the collars forced against the pipe by the bolt action.



Pouring the bell-and-spigot type of joint on a salt water disposal system's line from gathering pit to central treating plant. The type of joint is such that no special bell-holing of the trench is required, a small pot being used between melting vat and joint to permit of work in close quarters. White paper is used to provide contrasting background against which the thin stream of black, molten asphalt will show in the photograph.

Test sections of this pipe, incorporated in East Texas field return lines between the settling and skimming pits and the salt-water return units themselves, are being given service tests to determine whether this asphalt-cement lined and coated steel shell will not serve in place of much steel pipe now being renewed at frequent intervals to maintain the desired seal against loss of fluid. Since these lines are frequently subjected to high hydraulic or "water hammer" effect due to sudden changes in line pressures, the ability of the relatively elastic lining of the pipe to absorb such pressure waves without damage to steel sleeve or to couplings is being studied, as is its resistance to deformation under internal heat and severe outside temperature changes.

Cycling Operations And Potential Use of Products

JAMES E. PEW, Director
Natural Gas and Natural Gasoline Division
Petroleum Administration for War

Gas cycling is so new to field developers and natural gasoline operators that its great potentialities can only be appreciated by reviewing the rapid development of the process and the technological advances seen as impending, as is done in this discussion which was presented before the California Natural Gasoline Association at its Los Angeles meeting, November 5, 1943

I HAVE chosen "Cycling Operations and Potential Use of Products" as my subject in order that I might emphasize the major role that those operations are today playing in wartime production and will continue to play upon the return of peace. The coming months will see the Paloma Cycling Plant, in which some of you are personally interested, placed on stream, adding 7500 barrels per day to the nation's supply of those light hydrocarbon fractions which are volumetrically equivalent, by virtue of their natural highly refined state, to two or more times their production in terms of crude oil. It is wise, then, to review the state of the industry—to consider briefly the past, but more fully the present and future scope of cycling operations.

It is interesting to note that two Californians, Bruce H. Sage and William N. Lacey, have played an active role in the amassing of knowledge pertinent to this offshoot of the natural-gasoline industry. At the request of the American Petroleum Institute, they early undertook a comprehensive study of the complex phenomena associated with retrograde condensation in the reservoir. That investigation, as you know, culminated with issuance of an authoritative text, "Volumetric and Phase Behavior of Hydrocarbons."

The authors have continued their research, however, on the nation's condensate wealth, which today lies essentially in the Southwest. In the last decade, condensate field discoveries in that area have risen yearly, reaching a peak of 44 percent of the total number during the first half of this year. But there are no strict geographic—only geologic—limitations: such fields have been found in the North, in the Turner Valley field of Canada; in the East, in the Oriskany fields of the Appalachian area; in the Rocky Mountain region, where construction of a cycling plant for the Walden area, embracing the North and South McCallum anticlines of Jackson County, Colorado, is now under consideration; and on the Pacific Coast at Kettleman Hills, Paloma, South Coles Levee and Helm. Condensate reserves do not appear large in the petroleum wealth of the United States, representing only about 5 percent of the total, but they assume herculean stature through their potential use.

Started in South Texas

The first plant for cycling gas-condensate production was placed in operation early in 1937 in the Agua Dulce area of South Texas, following what might be termed "pilot plant" operations at the Big Lake field in Texas. Unitization was then slowly building a case for itself, but unit operation for the field was not undertaken. Today four plants are operating at Agua Dulce, but they, through coordination of effort, are effectively removing the increasingly valuable lighter hydrocarbons from the condensate sands. And it is from Agua Dulce and Stratton, both appearing to be major producing problems upon their discovery, that gas, having served its purpose of expelling liquefiables from the reservoir, will be sent to the Appalachian area this coming year and thereafter through a gas-bearing "Big-Inch."

In the ensuing six years, cycling plants have passed through stages suggested by the natural-gasoline industry —simple separation, stage separation, refrigeration and stage separation—until today the absorption type plant, capable of operating at pressures up to 2000 pounds, is in use almost exclusively. Modern cycling-plant design has permitted conversion, easily, to embrace technologic advancements as they were made.

With present-day design, cycling plants can function either in complete or partial coordination with refinery operations. When cycling operations are completely coordinated with those at the refinery, the wet gas is processed initially to effect removal of all liquefiables, with extraction efficiencies running as high as 85 percent on butanes, and 99 percent on the heavier hydrocarbons. The fractions so recovered are then separated into (1) an ethane-propane mixture which in the absence of a market may be injected into the producing formation in liquid form; (2) a mixed butane fraction, which is carried to the refinery by pipe line; (3) a fraction containing pentanes plus, which is delivered to the refinery by pipe line or truck; and (4) a residual oil, suitable for use as plant absorption oil.

It is a plant of the type just described which is currently under construction at the Paloma field, Kern County, California, with delivery of products scheduled to the new 100-octane plant of The Texas Company refinery. It should be noted, however, that this is by no means an inflexible arrangement. Modern cycling-plant design readily permits of partial dissociation with the refinery. Through extensions of minor magnitude, plants can be altered for semi-independent operation.

Operation

Partially integrated operations are now in common use. In the course of such operations, the ethane-propane mixture may be returned to the formation and the butane fraction transported to the refinery by pipe line, as before. The heavier products, however, are processed to yield a finished grade of fuel — either motor fuel, or 87- or 91-octane aviation fuel—while the naphtha

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Harbar Drilling Company needed a new "Cardwell" draw works.

Hannum Drilling Company needed a new "Cardwell" draw works.

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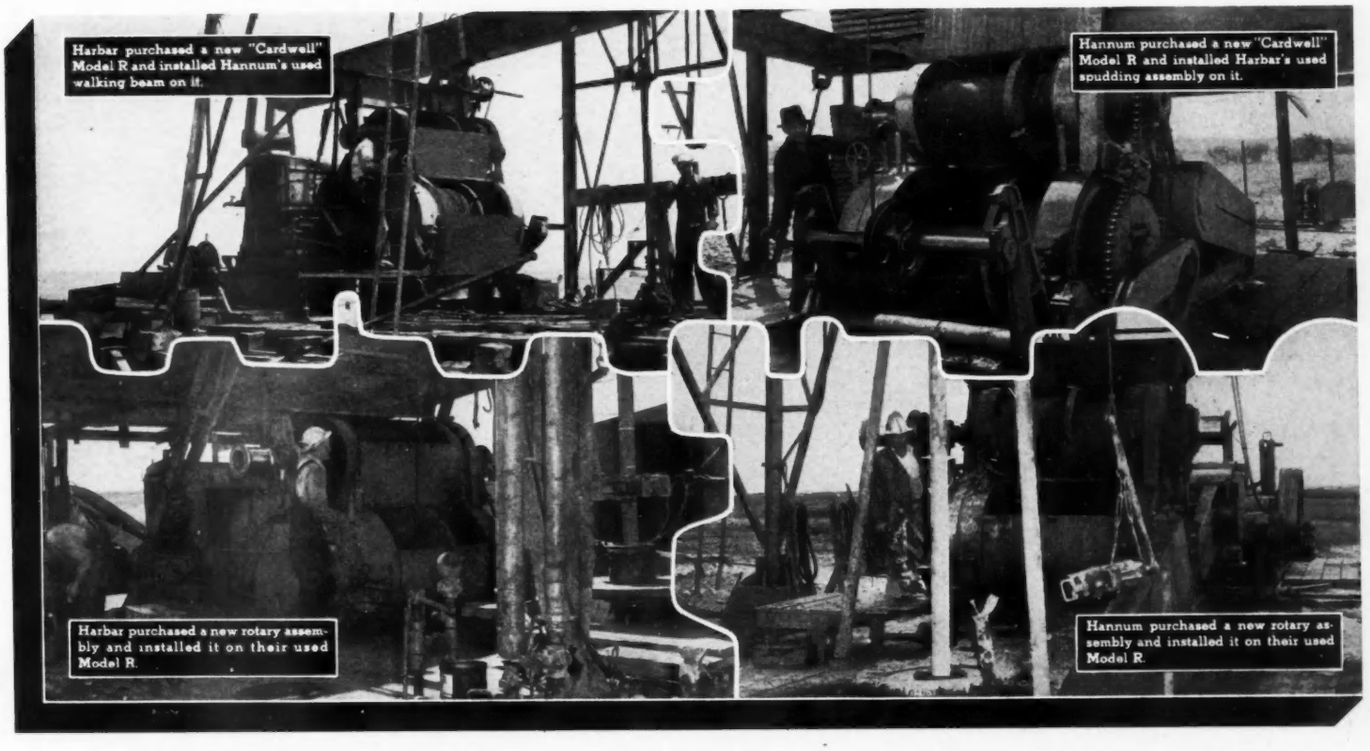
Harbar purchased a new "Cardwell" Model R and installed Hannum's used walking beam on it.
Hannum purchased a new "Cardwell" Model R and installed Harbar's used spudding assembly on it.
Harbar purchased a new rotary assembly and installed it on their used Model R.
Hannum purchased a new rotary assembly and installed it on their used Model R.

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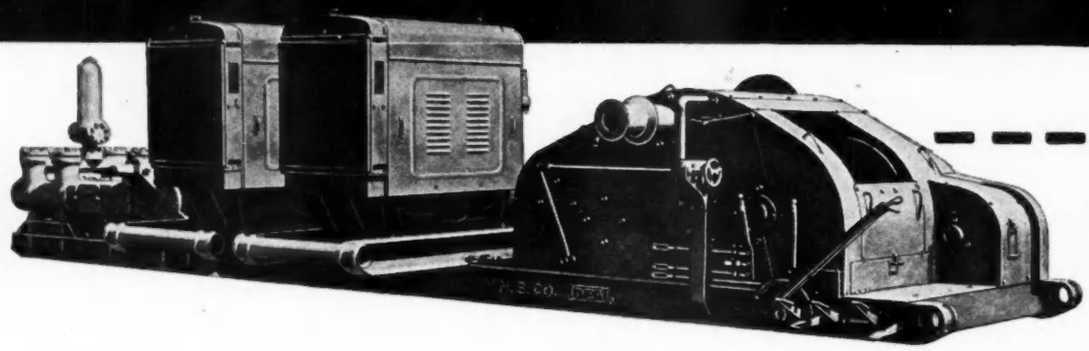

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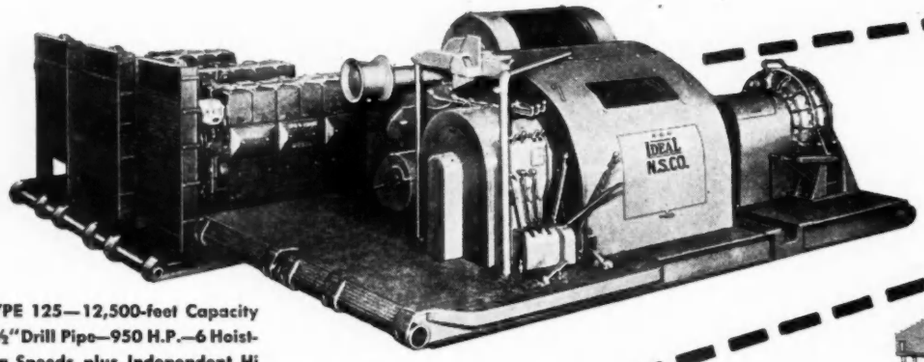

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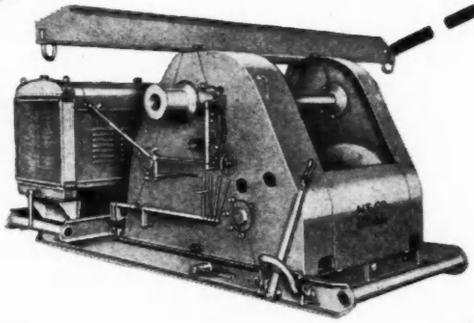

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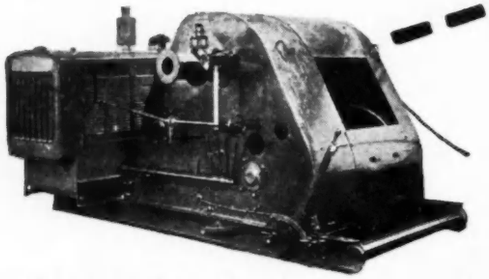
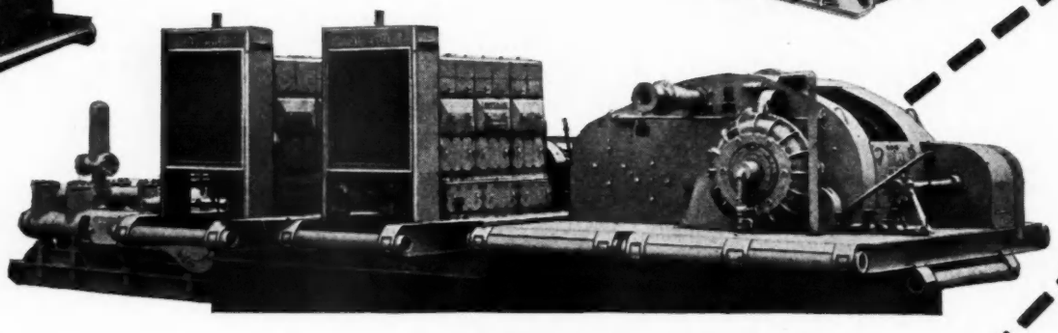


TYPE 30—3000-feet Capacity 3½"Drill Pipe—100 H.P.—4 Hoisting Speeds—4 Rotary Speeds.



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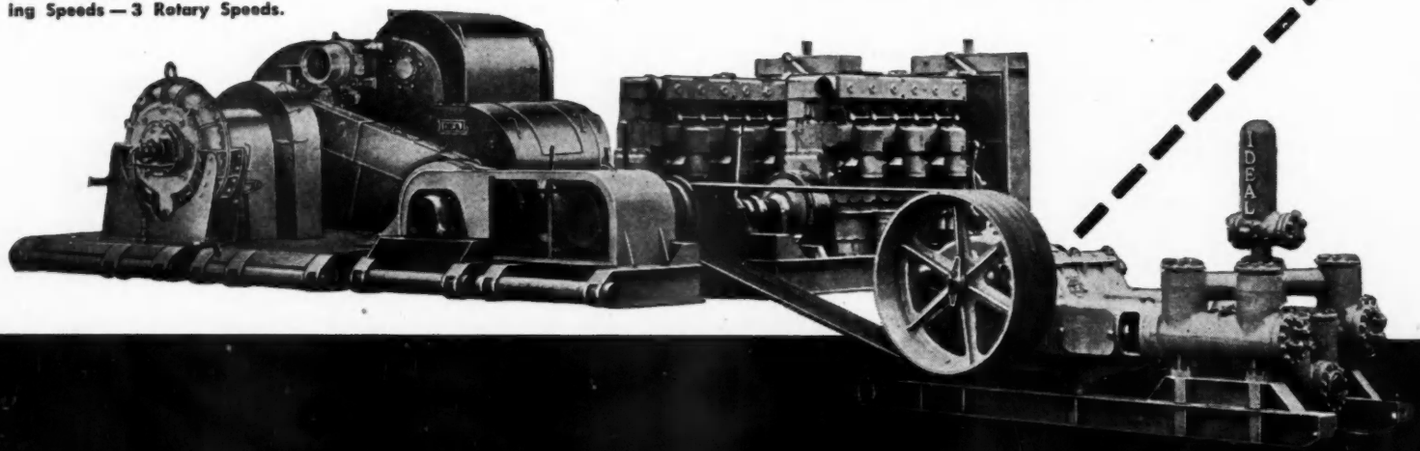

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(separated when aviation fuel is produced), kerosine, and absorption oil are separated and retained or marketed. Only a minor change in plant operation is required to yield motor fuel or high-octane fuels, as desired, again illustrating the extreme flexibility of cycling-plant operations. The naphtha yield in the production of high-octane fuels has been found to have a market as charging stock for use in the thermal-cracking "quick butadiene" process. Plants in the Agua Dulce-Stratton area of South Texas may be cited as typical of those operating in partial coordination with refineries.

In a modification of this type of operation, the cycling plant may again return the ethane-propane mixture to the producing formation and separate the butane fraction into normal butane and isobutane. The normal butane is then distributable by tank truck in the form of a liquefied petroleum gas, or as a chemical raw material, while the isobutane is delivered to the refinery for alkylation. The heavier fraction is then made to yield motor or 87- or 91-octane fuel, as desired. The disposition of the naphtha, kerosine, and absorption oil produced has earlier been noted. It is evident, then, that the modern cycling plant can be of major importance in today's wartime production, while it is further evident that minor changes in post-war plant operation will make available a steady flow of valuable peacetime products.

The hastening of Allied military operations, with the extension of major operations to two main theaters of war, European and Pacific, has of necessity been accompanied by heightened demands for aviation fuels. Deputy Petroleum Administrator Ralph K. Davies stated on October 21 that production of these high-octane fuels has increased over 400 percent since the outbreak of war. The lighter hydrocarbons obtainable through cycling have played a highly significant part in making possible that increase.

Aviation Fuel

Cycling operations are fundamental to the success of the aviation-fuel program, as they make available a substantial portion of the isobutane which goes into the production of iso-octane alkylate, isopentane, and base stocks. It is accordingly altogether possible to produce a finished 100-octane aviation fuel from raw material derivatives of the cycling plant..

But what of the economic considerations involved in cycling operations? Because of your distance from the center of these operations—PAW District 3—you men of the California natural-gasoline industry are probably not overly familiar with such considerations. It may be well to digress momentarily, then, to look at condensate field development as expressed in terms of dollars and cents.

Unitization of condensate fields, which permits of a characteristically conservative development, is capable of yielding returns equally as profitable as those obtained in the closely-spaced competitive development of oil fields. Unitization has long been a stumbling-block in the path of oil and gas conservation, and nowhere more so than in California. Last month E. E. Pyles, chairman of District 5 Petroleum Industry Production Committee, speaking on "Sources of California's Future Oil Supplies" before the Interstate Oil Compact Commission, stated:

"The principle problem in California . . . is not the technique of recovery but rather the problem of educating our producers and land-owners to the desirability of such procedure and the necessity of unitized or cooperative work as a prerequisite to successful recovery methods. Oil production in this state for the past 25 years has been on a highly competitive basis with most of our fields highly diversified in their surface ownership . . . Unless, and until our operators are fully conversant with this problem and are willing to throw into the pot their individual properties for the greater reward of increased recovery, little can be accomplished of a substantial nature."

Value of Condensate

The natural-gasoline operator, living on the waste product of the oil operator, has in the past unkindly but perhaps realistically been termed a scavenger. I believe that his physiognomy is today altering in the eyes of the oil industry, and that he no longer appears a hungry vulture, but rather a wise old owl. He has played a prime role in making the oil industry conservation-conscious, and today that industry is learning another lesson from him through the efficacy of his unitized cycling operations, doubly necessary in condensate development.

In wartime condensate has assumed, through its natural highly-refined state, a value superior in many instances to that of crude oil. In this connection, data compiled by the Subcommittee on Aviation Gasoline Potentialities established by the PAW District 3 Natural Gas and Natural Gasoline Committee are of interest. It was disclosed that aviation grade naphtha could be made available through cycling operations for only 28 percent of the critical material expenditure required for well-head production of this valuable fraction in crude oil. Following the extensive study undertaken, the subcommittee issued three recommendations which indicate fully the potentialities of cycling-plant operations. These were:

1. Development of condensate fields for cycling-plant operations, including installation of equipment for segregation of components necessary to the aviation-fuel program.

2. Increased recovery and segregation of aviation-fuel materials through installation of additional facilities in plants now operating.

3. Utilization of components such as ethane-propane mixtures, now being produced but not entering into the war program, for increased production of super aviation fuel.

Saving of Material

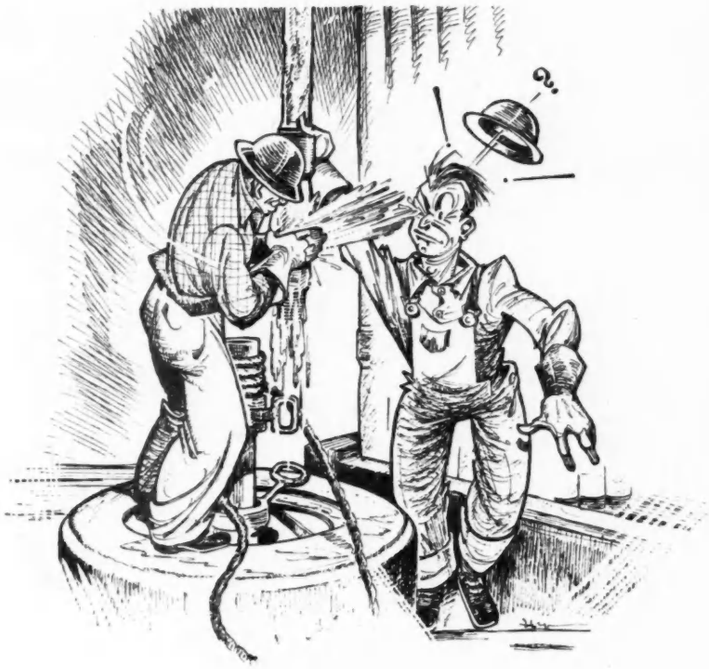
Some conception of the saving in both critical material and capital in the production of lighter hydrocarbons from condensate fields may be afforded by reference to the recently prepared program determination of the Natural Gas and Natural Gasoline Division of the Petroleum Administration for War, which calls for construction capable of yielding an additional 35,000 barrels per day of condensate, natural gasoline and lighter hydrocarbons. The estimated capital investment is $28,800,000, of which $10,800,000 covers the cost of the wells. The expenditure in critical material is estimated at 58,350 tons, of which 28,350 tons will be utilized in these well completions.

The completion alone of oil wells for production of an equivalent volume of similar hydrocarbons would total $55,800,000, while production of an equivalent volume of crude alone would cost $31,500,000. In terms of critical material, expenditures of 216,000 tons and 105,120 tons respectively, would be involved. In terms of processed production and reinjection in condensate fields versus well-head production in oil fields, the latter would cost nearly twice as much in terms of capital investment, and nearly four times as much in terms of critical materials.

Returning to the consideration of cycling-plant products, I should like to separate them into four major groups, examining them more or less in the order of their availability for utilization. Such a grouping affords:

1. Motor fuels and condensates.
2. Butane and pentane fractions.
3. Ethane-propane mixtures.
4. Dry gas.

In the past, base-motor-fuel and condensate stocks have not appealed too highly to refiners, because of their relatively low volatility and anti-knock rating. These factors, although offset to some extent by a high susceptibility to leading, have prompted refiners to reform base fuels from cycling operations



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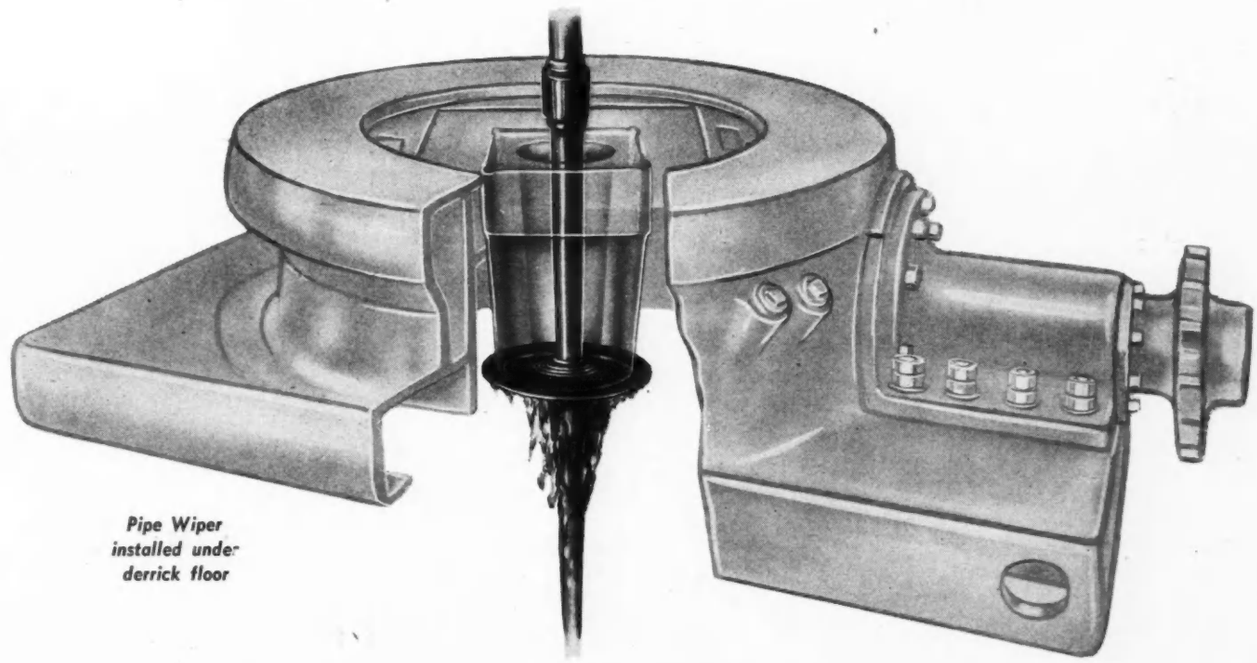

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into higher octane fuels. On the basis of cost, however, the refiner cannot compete with the cycling-plant operator, and satisfactory motor fuels, including leaded grades, can be produced in the field for less than 2½ cents per gallon. With declining crude discoveries and increasing condensate discoveries now the order of the day, increased use of cycling-plant fuels may be looked for in the future. The cycling plant operator can readily adapt his operations, at slight cost, to embrace the major technologic advancements of today and tomorrow.

Processing

In processing the butane and pentane fractions separately, isomerization, polymerization, hydrogenation, dehydrogenation, and alkylation methods are employed. However, in the production of super fuels and products, no process may be looked upon as being of static design: new methods must be constantly explored with a view toward making more efficient use of these lower-boiling fractions, which promise to be of even greater value in the post-war period. Their potentialities mark them as being among the most valuable of the hydrocarbon fractions.

The large quantities of liquid ethane-propane mixtures presently separated in cycling operations, but returned to the producing horizon in the absence of a market, will find that market with improvement of transportation, storage techniques and chemical development. They bear consideration, in such event, as industrial liquefied petroleum gases. Several other possibilities suggest themselves: first, that they are potentially useful as manufactured gas enrichment agents, and, second, that inasmuch as it has been proved possible to produce carbon black from liquid hydrocarbons, and since higher yields have been noted with higher ethane content of fuels used, they would appear to be of potential importance in the production of this necessary item, in which 11 percent of the nation's total gas consumption was utilized this past year.

Again, with the development of modern methods of regenerative cracking, cycling products are available for the production of such chemical raw materials as acetylene, ethylene, propylene, butadiene, and benzene. Generally speaking, today's super war products are synthesized from chemically active unsaturated hydrocarbons such as these, either produced or producible with cycling products as basic constituents. Ethylene and propylene so obtained afford unsaturates of prime value in the production of neohexane and cumene. In combination with benzene, ethylene may also yield styrene, a principal component of Buna S rubber. By rearrangement or recombination, hydrocarbons obtainable in the cycling plant can provide the raw materials for any of the five basic types of synthetic rubber, from which airplane and other tires, innerseal semi-solids for gasoline tanks and tubes, and other products of diversified nature may be derived.

Use of Dry Gas

When all liquefiable hydrocarbons have been removed from the condensate reservoir, 85-90 percent of the original gas content will still be contained therein if maximum production has been obtained through reinjection of residue gas. This dry gas, having performed its initial task of expelling liquefiables from the reservoir, is then available for use as fuel, for gas lift or repressuring in another field or another horizon or for conversion into useful products.

Rapid developments in petroleum chemistry, particularly since 1930, have shown that natural gas will react when activated by the efforts of heat, pressure, chemical reagents, and light; and that these reactions can be made to proceed at practicable conditions, especially if catalysts are employed. As these results became known, the possibility of a synthetic organic chemical industry based upon these reactions became apparent, and today this industry is large and growing rapidly. It would require a volume to set forth all the potential uses of natural gas and that volume would be obsolescent prior to completion. As Dr. Gustav Egloff, our foremost hydrocarbon protogonist, has so ably said:

". . . if we start with methane gas alone, all of the known synthetic products that man has produced in organic chemistry can be derived . . . Any synthetic product can be produced at a price; the hydrocarbons are all potentially available to be converted into the manifold products that man requires in a modern world."

Thus the natural gas being reinjected and stored for future use becomes of increased value with each technologic advance. As an example, today in wartime, synthetic ammonia continues to find itself an important base material in the production of munitions. In the production of synthetic ammonia the most difficult and expensive ingredient to obtain is hydrogen. Today approximately 50 percent of the emergency synthetic ammonia is manufactured with hydrogen derived from natural gas with a great saving in investment, time and critical materials.

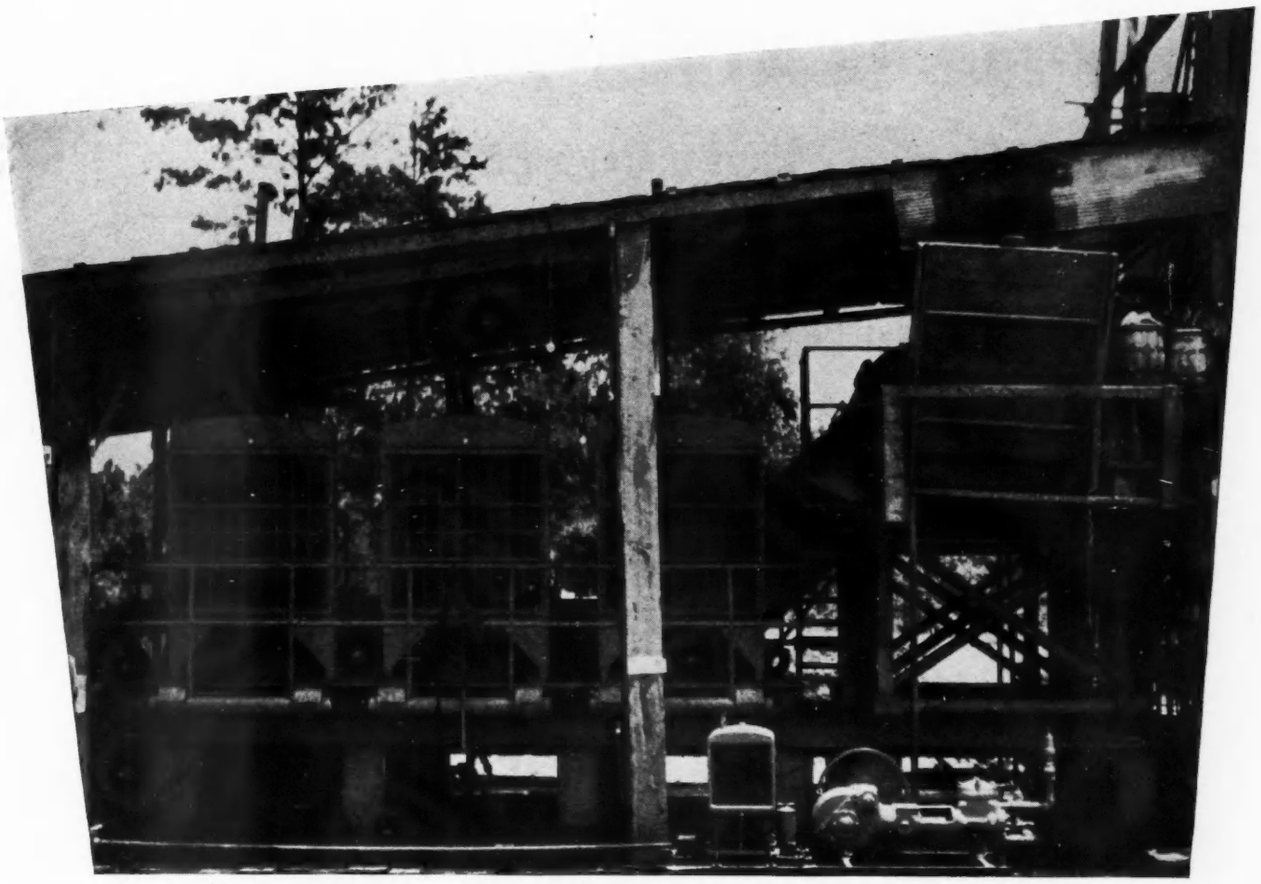
Dry Gas to Motor Fuel

One of the outstanding potential uses of dry natural gas is the synthesis of liquid hydrocarbon fractions by means of a process commonly referred to as the Fischer-Tropsch process. The production of motor fuel by means of this process, in this event making use of a solid fuel (coal or coke), is now in commercial use in Germany. It is interesting to note that an estimated 50 percent of Western Axis oil is obtained through synthesis, and that the aviation-fuel derivative reportedly will bear favorable comparison with our high-octane products. With natural gas as the raw material, three steps are involved: reforming to water gas (hydrogen and carbon monoxide), synthesis into liquid hydrocarbon fractions, and finally recovery and separation. The three steps are already being practiced separately on a commercial scale, and in all likelihood a combination commercial installation will be realized in the near future. Gasoline, fuel oil, and heavy oil will thereby be made available under favorable economic conditions to augment our declining petroleum resources.

Oxygen is today being introduced into the hydrocarbon molecule on a commercial scale, but the mixture of products so obtained makes recovery and separation difficult. A process should be available in the near future, however, whereby natural gas may be converted into formaldehyde, with a high degree of purity. Through this process, natural gas will become available to the expanding plastics industry in the form of this basic raw material.

Of the total current 260,000 barrels daily of natural gasoline and cycling plant products, it is estimated that one fourth is produced in cycling operations. Plants now being constructed—among them the Paloma plant—will materially add to the present cycling-plant production, while additional construction programmed by the Natural Gas and Natural Gasoline Division of the Petroleum Administration for War for completion by the end of next year will result in cycling-plant production approaching 40 percent of the total production of natural gasoline and allied products. Such operations are, then, obviously destined to play an ever increasing part in the recovery and utilization of the lighter hydrocarbon fractions, both in the war and post-war periods.

It is not possible to prophesy the extent of the role which cycling operations will play in future development in California; but it is possible that deeper drilling will result in the discovery of additional condensate pools. But whatever the importance of the role that cycling operations may assume here, I am sure that you men of the natural-gasoline industry will fill that role capably.



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Determining Probability of Success Of Secondary-Recovery Operations

PART 2

Geological Factors Influencing Secondary Recovery

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IN ORDER to analyze the influence that geologic factors have on the secondary-recovery possibilities of a particular pool, the available subsurface geological information and production data should be assembled in graphic form on a structure map on top of the oil sand and on an isopach map of the sand. A number of sections parallel to the long axis of the pool, and at right angles to it, should be constructed. In connection with the study of data, the effects of primary reservoir performance on secondary-recovery possibilities should be taken into consideration. If the preliminary investigation indicates that the pool or tract has secondary-recovery possibilities, a core-testing program should be laid out to check and supplement the geological data on the sand body and to obtain information in regard to the porosity, oil and water saturation, and permeability of the sand.

The amount of oil recoverable by secondary-recovery methods is a deciding factor in determining the feasibility of such an operation. The procedure for its determination is outlined. Sand uniformity in relation to secondary recovery is analyzed. Texture and mineralogical composition of the sand are considered. The influence that shale partings in the sand, the shape and geological pattern of reservoir, structure, and depth of sand have on secondary-recovery operations are discussed. The geologic factors that have to be taken into consideration in selecting the method of secondary recovery best suited to meet certain conditions are pointed out. Limestone reservoirs are discussed briefly.

Many pools possess geological features that permit most efficient exploitation by secondary-recovery methods only when some form of unitization is adopted.

This article is part of a symposium on secondary recovery presented at the annual meeting of the American Petroleum Institute, Division of Production, on November 9, 1943, at Chicago. The symposium consisted of 10 papers. Other papers will be published in future issues.

IN ORDER to analyze the influence that geologic factors have on the secondary-recovery possibilities of a particular oil pool, a subsurface structure map on the top of the oil sand and an isopach map of the sand should be prepared from the data collected under Section 3, "Petroleum Geology," of the Schedule of Information Desirable for a Study of the Secondary-Recovery Possibilities of an Oil Field. The locations of all wells and the boundaries of the pool should be shown on these maps. If edge water and gas caps are present, their original and present positions should be indicated. Areas affected by accidental floods from casing leaks or improperly abandoned holes, if any, should be outlined. If the initial and total production of the wells is known, this information also should be placed on the maps.

After the maps have been completed, a number of sections parallel to the long axis of the pool, and at right angles to it, should be constructed showing in as much detail as the available data permit the position and thickness of the gas and oil pays, water-bearing zones, shale partings, and other relatively impervious layers, faults, etc.

In fields where it has been the practice to keep good records, an analysis of the foregoing data assembled in graphic form, together with a study of the previous history of the pool and a consideration of the economic factors involved, should indicate whether the pool has secondary-recovery possibilities that warrant further investigation. Unfortunately, the data available for many depleted pools in the older fields leave much to be desired in this respect.

In old fields, where it is customary to shoot wells in connection with cleaning-out work, it is often possible to secure nice chunks of sand from the shot holes while the cleaning-out is in progress. If properly selected, such large-size chunks can be used for determining the general range of porosities and permeabilities for the particular sand in that area. Such preliminary studies often are helpful in analyzing the secondary-recovery possibilities of a pool or tract.

In many of the pools in which secondary-recovery methods have been employed in the past the accumulation of oil has been controlled by lenticularity of the reservoir rock; i.e., they are stratigraphic trap-type pools. As such, many of them have not received the benefits of active natural water encroachment, and the oil has been produced by internal gas drive, generally regarded as being the least efficient natural reservoir performance known. In addition, it should be kept in mind that most of the existing secondary-recovery operations are located in the older pools which were produced initially at times when little attention was given to the conservation of reservoir energy. In consequence, the solution gas was extravagantly wasted; and, when this propulsive agent had been dissipated, subsequent

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production could come only from gravitational drainage. The oil left in the reservoir by these early inefficient primary-recovery operations is the oil which is now available for the application of secondary methods. There can be little doubt that if pools of this character had been produced with regard to presently known principles of reservoir performance, the opportunities for secondary-recovery methods would be much less than they actually are.

Some clue as to the adaptability of a pool to secondary-recovery methods can be gained from an analysis of the past reservoir performance. If natural water encroachment has been active and uniform, the residual-oil content, after the primary period of production has passed, probably will be too low to permit profitable secondary operations. The effectiveness of natural water encroachment should not be taken for granted, however, unless production records are available to confirm a high degree of recovery efficiency. Frequent instances are known where water has migrated rapidly through relatively thin zones of high permeability and has drowned out the wells by the formation of water cones, leaving much oil unrecovered in the less-permeable strata. A pool in which such conditions exist can be regarded as a favorable prospect for the application of secondary-recovery methods, provided the offending strata of high permeability can be plugged off successfully.

The primary-recovery efficiency of pools in which oil has been produced by controlled gas-cap expansion is not so well known, although in some instances it is believed to be very good. In the early days of the oil industry it was common practice to blow off the gas cap in the hope that wells located at high structural positions would eventually produce some oil. Unquestionably, this was a most wasteful procedure, as it eliminated the propulsive effect of an expanding gas cap and at the same time permitted the oil to migrate updip and to wet dry sand, forming a film thereon which is not susceptible to any known recovery process. However, even if both of these unfavorable developments took place, it is possible that the primary-recovery efficiency of an oil pool which had an original gas cap that has been dissipated may be better than one in which recovery has been obtained strictly by internal gas drive. The reason for this conclusion is that in the gas-cap pool the oil was probably completely saturated with gas under the existing conditions of pressure and temperature in the reservoir, whereas in the internal gas-drive type of pool the oil many times was under-saturated and thus would have a limited amount of solution gas available to expand and drive the oil to the well bore.

From the foregoing it should be apparent that efficient primary reservoir performance may be regarded as an unfavorable indication for successful secondary-recovery operations, and that the most promising opportunities for secondary recovery will be found in pools possessing a high residual-oil content. The latter condition will be found more generally in pools where the primary oil recovery has been obtained by internal gas drive or where natural water encroachment has been erratic or lacking in uniformity.

If it is decided that the pool or tract under consideration has secondary-recovery possibilities, a core-testing program should be laid out. The core wells should be so located as to check and supplement the geological data on the sand body previously assembled on the maps and sections, particularly the net thickness of productive oil sand. The number of core wells, therefore, will be determined in part by the abundance or scantiness of the data that were available for the preliminary studies. The analyses of the cores will furnish information in regard to the porosity, oil and water saturation, and permeability of the sand.

Recoverable Oil

An estimate can be made as to the amount of recoverable oil that is present, using the information furnished by the core analyses in conjunction with the isopach map and cross-sections—revised to conform to the additional data obtained from the cores. The areal extent of the pool, effective productive pay thickness, porosity, present oil saturation, and residual-oil saturation furnish the data for the calculation. Unless the information is already available, it is advisable to conduct some laboratory experiments on the sand in question to determine the residual saturation, below which no further oil can be recovered. In the case of sand bodies that contain two or more oil pays that differ markedly from one another and are separated by sufficiently thick shale or other relatively impervious layers, these should be treated separately. The presence of an amount of oil recoverable by secondary methods, sufficient to meet the economic requirements, naturally will be a deciding factor in determining the feasibility of a secondary-recovery operation.

Sand Uniformity

The degree of homogeneity of the oil sand ranks second in importance from the standpoint of secondary recovery—oil saturation being first. Homogeneity has to be considered from the standpoint of porosity, uniformity and actual size of grains, character and amount of cementing material, pore-size distribution, permeability, and fluid saturation, both vertically and laterally in the sand.

Reasonable uniformity in sand permeability is essential in secondary recovery. If the layers comprising the sand body vary widely, the more-permeable sections become depleted of recoverable oil long in advance of the less-permeable ones, and then permit bypassing of the driving medium to such an extent that further operation becomes uneconomic. Reasonable uniformity in sand permeability is more important in water flooding than in air or gas drive, as it is more expensive to develop and operate a water-flood than an air- or gas-drive project. It costs more to circulate water than air or gas.

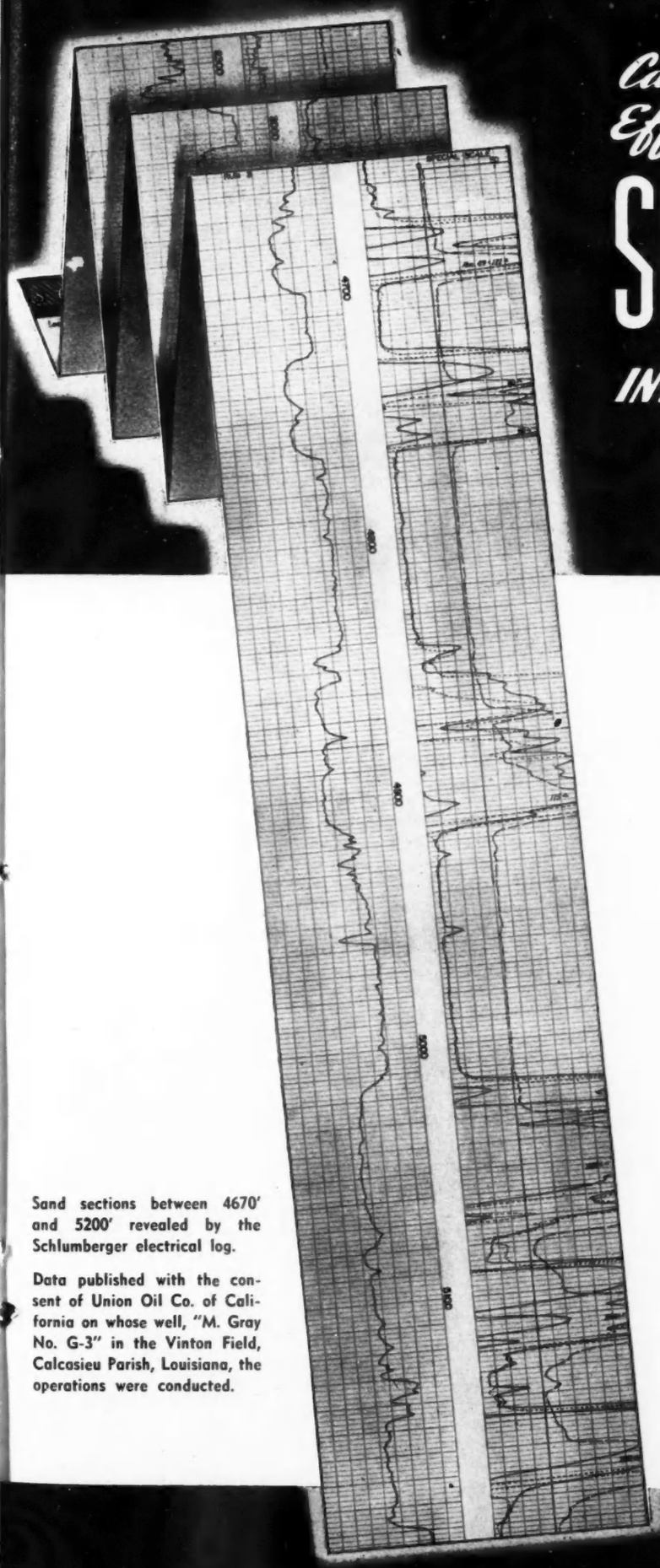
If the sand body shows a wide range in permeability, the various layers should be compared with respect to porosity and oil saturation. The sand section may be found to be such that highly permeable layers with low oil saturation can be packed off, or the more-permeable and the less-permeable layers may be separated by sufficient thicknesses of shale to permit treatment as separate units. If the more-permeable layers represent a large enough section and contain enough recoverable oil, it may be possible to disregard the less-permeable layers in developing a secondary-recovery project.

In comparing the permeabilities of the various parts of a sand body, fluid saturations must be taken into consideration, as it is the effective permeability that determines the transmitting capacity of any layer in a sand body to a particular fluid phase.

Delayed drilling, selective shooting, multiple packers, and selective plugging are some of the methods that have been employed in attempts to overcome the difficulties arising from an irregular permeability profile in a sand body.

Texture of Sand

Actual size, distribution of various sizes, and the shape of the grains are characteristics of a sandstone that have an important bearing on porosity, permeability, and other properties affecting oil recovery. The most successful waterfloods have been conducted in bodies of sandstone of relatively fine texture. There are several reasons for this. A fine-grained sandstone, because of its lower permeability, retains a larger percentage of its original oil content after it has been depleted by primary methods than does a more permeable one. Also such a sand body usually possesses a greater degree of uniformity with respect to permeability than a coarse-grained one. It is questionable whether grain size in itself is a factor in secondary recovery, provided the sand possesses the necessary



Sand sections between 4670' and 5200' revealed by the Schlumberger electrical log.

Data published with the consent of Union Oil Co. of California on whose well, "M. Gray No. G-3" in the Vinton Field, Calcasieu Parish, Louisiana, the operations were conducted.

Case History Demonstrates the Efficiency and Economy of

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INTEGRATED WELL SERVICES

Here is an example of how oil operators may obtain

MAXIMUM SUBSURFACE DATA AT MINIMUM COST AND LOSS OF RIG TIME

1. MAXIMUM SUBSURFACE DATA: The following Schlumberger services were used on this well:

   A. **Electrical Logging**—Three surveys at 656'-4436', 4436'-4790', and 4790'-5359', respectively. Although no conventional cores were taken, these surveys provided:

      1. Correlation
      2. Discovery of oil sands
      3. Water levels

   B. **Side Wall Coring**—Fifty-one side wall cores were taken in three operations subsequent to the three electrical logging surveys. These cores:

      1. Confirmed the existence of oil sands and their nature
      2. Indicated the extent of saturation
      3. Determined gas-oil contact

   C. **Photoclinometer**—Since this well was on the flank of the dome and the sands dipped steeply, it was important to know the exact location of the bottom of the hole. A Photoclinometer survey was made in connection with the second logging and sampling operation.

   D. **Dipmeter**—In order to ascertain the true thickness of the sand and to aid in making subsequent locations, a Dipmeter survey was made after the third electrical logging survey to determine the magnitude and direction of dip.

   E. **Precision Gun Perforating**—For precise shooting, the same truck and cable used for the above operations were also used for the gun perforating.

2. MINIMUM COST AND LOSS OF RIG TIME: This wealth of information was obtained at a total cost of approximately $2,200.00. Because of the integrated nature of the various services, only four trips to the well location with a single service unit were required. Due also to this unique feature of Schlumberger service, total rig time required for all operations was only 21 hours.

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oil saturation and a sufficient degree of uniformity.

The influence of the pore pattern, viz., the size of the openings, their shape, and the extent to which they are connected, and the pore-size distribution are factors that need more investigation. In some reservoir rocks the pores are of nearly uniform size, whereas in others some pores are much larger than the rest. The latter condition is particularly characteristic of certain limestone-type reservoirs. It seems reasonable to believe that uniformity in size of pores is favorable to high recovery.

Mineralogical Composition

The extent, if any, to which differences in mineralogical composition of sand grains and cementing material affect the amount of oil that is retained in the sand by adsorption has not been worked out. Data also are lacking as to the extent the swelling of clay minerals present in some oil sands may clog the pores and reduce permeability when water flooding is employed. Pyrite may occur in a sand in such amounts that, when air or oxygenated water is employed, enough sulfuric acid may be generated to increase decidedly the corrosive action on the equipment of the water accompanying the oil.

Shale Partings

If the sand body is split into layers by shale partings, the cross-sections previously prepared should indicate whether individual sandstone layers have a tendency to finger out laterally in the shale in relatively short distances, or whether the opposite condition prevails. Any evidence of cross-bedding also should be noted. These features should be considered in determining well spacing and well patterns. The presence of shale partings in a sand body is not necessarily deleterious, provided the individual sand layers possess a reasonable degree of continuity and uniformity with respect to permeability, porosity, and oil saturation.

Shape and Geological Pattern of Reservoir

Many of the sand bodies which constitute reservoir rocks in oil pools are not continuous sheets of sand, but are lenticular in shape. They are remnants of ancient channel and delta deposits, beach deposits, off-shore bars, or deeper-water deposits that escaped erosion and reworking when advancing seas buried them under a load of mud. Such sand bodies frequently exhibit a definite "grain" or "anisotropy." The permeability of the sand in one direction is greater than in another. This character of the sand body often can be determined by the study of old well records and histories, as recommended in the first part of the paper. Good examples of such "anisotropy" are found in parts of the Bradford pool[1] and in many of the pools of the Venango district[2] in Pennsylvania, and in the Burbank and South Burkank pools of Oklahoma.[3] Many others could be cited.

The practice in the past has been to set up the pattern of well spacing mainly to fit the land lines. As the advantages of unitization become more generally understood, it may become general practice to fit the pattern to the geological pattern of the sand. In the narrow "shoestring" pools of Kansas, permeability usually is greater lengthwise along the trend than across it. Operators frequently drill 3 or more water-intake wells, rather closely spaced, at right angles to the trend, then 3 oil wells at a distance of 600 feet or so along the trend, then 3 more water-intake wells, and so on. This gives an effective and efficient water push, and wells are easily flowed.

Structure

Most secondary operations thus far have been conducted in fields exhibiting only moderate structural relief. Many are located in pools where the oil accumulation occurs in stratigraphic-trap type reservoirs. In such pools the dip of the strata may be so slight as to have no noticeable effect on secondary-recovery operations. The location of injection and producing wells may be made to conform to property lines and to known sand conditions.

It is questionable whether such practice would prove equally successful in pools where oil and gas accumulation has been controlled by well defined anticlinal structure, or where an appreciable monoclinal dip exists. Under such conditions it is believed to be better practice to introduce gas into the reservoir at updip locations and to introduce water downdip. In pools that already possess a natural water drive, this can be augmented by the injection of additional water downdip near the existing water-oil contact. If gas caps occur that are not separated from the oil sand by shale or other relatively impervious partings, gas-cap repressuring may prove feasible, provided the sand has suitable permeability. Some form of unit operation is usually necessary to take advantage of structural features.

Depth of Sand

Depth of sand is an important factor in secondary recovery. If the depth is too great to permit redrilling and old wells have to be utilized as intake and producing wells, the recoveries to be expected are much lower than where new wells can be drilled—other conditions being the same.

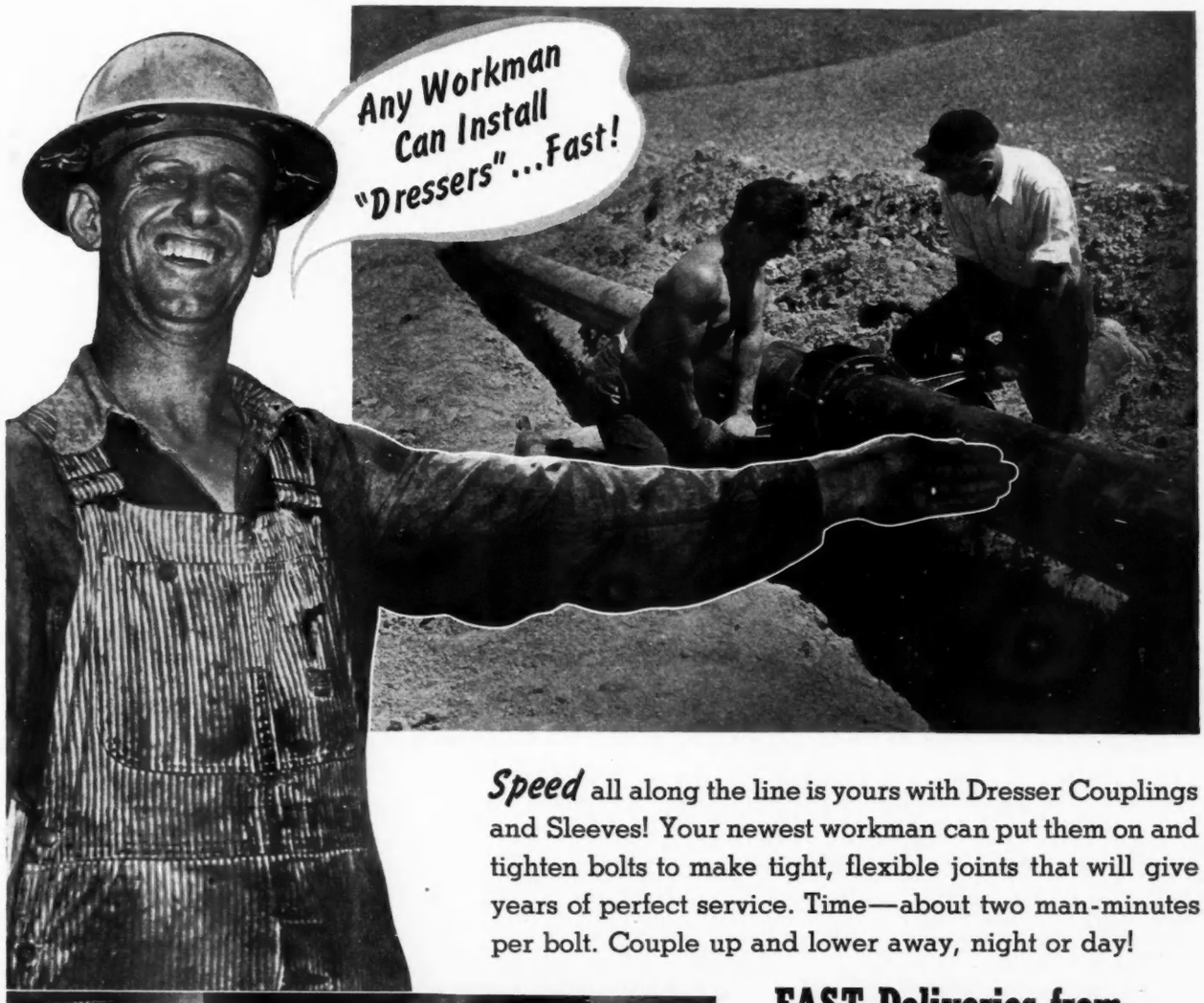
Depths that are too shallow may also prove detrimental. The maximum pressure that can be applied in a secondary-recovery operation is limited by the depth of the oil sand. In water-flooding operations conducted in the northern Appalachian area, it has been found that there is a critical pressure not greatly in excess of the static pressure of the column of rock overlying the oil sand, which, if exceeded, permits the penetrating water very slightly to expand openings already existing — to which openings the penetrating water has access. In addition, it is possible that in pools of less than 200- or 300-foot depths, joints and other fracture zones may be present which will permit break-throughs to the surface. This is particularly apt to occur in regions of relatively rugged topography and considerable relief, where circulating ground waters have had an opportunity further to weaken such zones to considerable depths.

Water Flooding Vs. Air or Gas Injection

Laboratory experiments indicate that water flooding is more efficient than air or gas injection in recovering oil from a sand, and field results on the whole appear to bear this out. There are partly depleted oil pools, however, that have not responded to water flooding in which profitable secondary-recovery operations using air or gas injection have been conducted. Connate-water-to-oil ratios in the sands of these pools may be such that these are more permeable to water than they are to oil and, therefore, yield only water when subjected to a water drive.[4] Considerable additional quantities of oil can be, and have been, recovered profitably by means of air or gas injection in pools where apparently such a critical oil-water saturation exists[5].

Inasmuch as it is cheaper to circulate air or gas than water, a certain amount of bypassing is not so serious in an air or gas drive as in water drive. Partly depleted oil sands that are not amenable to water flooding due to lack of enough uniformity sometimes can be operated profitably by a secondary air or gas drive. Coarse oil sands, due to their greater variation in permeability and pore size, may not prove suitable for water flooding, and yet may yield profitable returns under air or gas injection. On the other hand, fine-grained relatively uniform oil sands with enough porosity and oil saturation, but with relatively low permeability, may yield much better returns under water flooding than under air or gas injection on account of the relatively high injection pressures and close well spacing required.

In some pools the choice between water flooding and natural-gas repressuring will depend on the relative avail-



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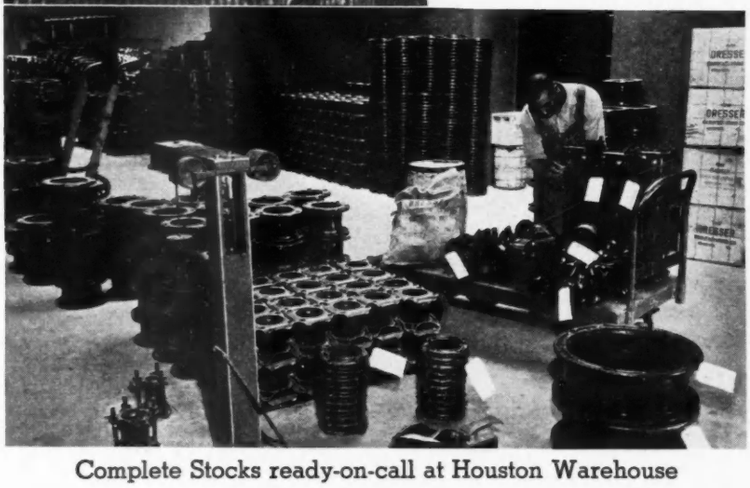

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ability and cost of water and gas. These should be investigated before a secondary-recovery operation is undertaken.

Limestone Reservoirs

The present discussion has been confined also exclusively to sandstone reservoirs. Oil and gas in limestone occur under a great variety of conditions: as, for example, in dolomitic zones, oolitic zones, coral reefs, interbedded sandstone lenses, fractures or joints, solution cavities, or along bedding planes and formation contacts. In most cases such reservoirs exhibit a much greater variation in permeability, pore pattern, and pore size than do sandstone reservoirs. For this reason the number of successful secondary-recovery operations in limestone reservoirs has been limited. However, where the oil occurs in sandy lenses, or in oolitic and dolomitic zones that possess a degree of uniformity with respect to permeability, pore pattern, and pore size that is comparable to that of sandstone reservoirs, promising results have been attained by repressuring with air or gas.

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Wartime Fire Protection

By A. A. JERGINS

Director, Facility Security Division, Petroleum Administration for War, Washington, D. C.

Paper presented to Group Session on Protection of Petroleum Facilities, before Twenty-fourth Annual Meeting of the American Petroleum Institute, at the Palmer House, Chicago, Ill., November 9, 1943.

IN OUR opinion, wartime fire protection is essentially nothing more than good peacetime protection. In peacetime, company management has a direct responsibility to the stockholders of the company to take precautionary measures to insure their plants against destruction by fire. During wartime, management has the additional responsibility of safeguarding their facilities in order to insure an adequate and continuous supply of the necessary petroleum products to meet the needs of our armed forces and the essential civilian demand. The Facility Security Division of the Petroleum Administration for War, together with branches of the military, is cooperating with industry to prevent the destruction of petroleum facilities by fire.

Inspection

Petroleum installations of all kinds are being inspected regularly by trained inspectors. Their observations and recommendations are continually being sent to the owners and operators of important properties. A practical benefit is, therefore, accruing to the industry and the war program through this systematic and technically directed program of fire protection. During the past year we have made few recommendations that would not be made in peacetime. Wartime fire protection can be resolved primarily into the following:

1. A good peacetime standard of construction, maintenance, and operation within the facility.
2. An extra alertness on the part of employees for high-grade fire protective maintenance, the prompt removal of hazards, and closer observance of fire regulations.
3. Mutual aid through reciprocal arrangements between oil companies within given areas so that the protective facilities of one company may be made quickly available to another in the event of need.

Many people regard fire protection merely as providing the means for fire extinguishing, viz, extinguishers, water systems, foam systems, fire-fighting equipment and the men who operate these facilities.

Prevention of Fire Spread

It has been our philosophy that fire protection of oil properties should also recognize two other fundamentals that normally do not receive suficient consideration. I refer to the elimination of fire hazards and to the physical means for the control of fire spread. Inexperienced labor and the pressure of war demands are contributing factors to fires. Therefore, a principal concern during war is the prevention of fire spread in order that the productive capacity of the plant will not be drastically reduced by fires that cannot be prevented. If a fire cannot be extinguished, it should be held at its point of origin and permitted to burn out while fire-fighting forces concentrate their attention on protecting the surrounding facilities. Structural conditions, therefore, should be such as to permit the fire to be held where it starts. This is one of the prime objectives of our survey activity.

Removal of Hazards

Next to this, we concentrate upon the removal of hazards which may cause accidental fire. I need not elaborate upon the slogan that "every fire is sabotage," whether of premeditated origin or not. Any fire of consequence in an important petroleum facility handicaps operations and production. It restricts to a greater or lesser degree the unimpeded flow of these vital products to the armed forces, to our highly dependent scheme of civilian economy, and to war industry. By and large, the oil industry has done a good job in eliminating within its shop common causes of fires. For the most part, its

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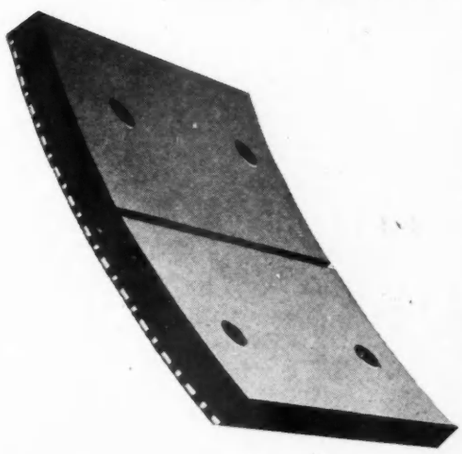

● Backed by complete knowledge and understanding of oil well drilling operations, Grizzly blocks are the best that can be produced —more than "tough enough" for the service involved. They give better performance and more ton miles per set, with less scoring and damage to brake drums. They will not grab, chatter, howl or smoke, and above all, they save essential steel. Made to exact manufacturers specifications for all types of drawworks.

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personnel has been well trained in this respect.

Fire Extinguishment

The third phase of our philosophy relates to fire extinguishment. Obviously, if a fire does occur, it is necessary that facilites should be available to put it out as quickly as possible. Most of the important oil properties are already well equipped in this respect. The smaller properties unfortunately are not so well equipped.

Intelligent fire control is obtained when apparently unrelated and individual conditions, each in itself not particularly hazardous, are correlated through careful analysis. In this respect the slope of ground or grade conditions is quite important. Grade or slope is too often overlooked unless it is so strikingly steep as unavoidably to impress itself upon the observer. A typical case is that of a refinery in which crude-oil tanks were elevated directly above the plant on a hillside. These crude-oil tanks were seriously exposed to lightning. They were not equipped with all-steel gas-tight roofs, and were highly susceptible to ignition from induced charges. The fire walls surrounding the tanks were entirely inadequate to contain their contents. The refinery was located on the edge of a small stream which, a short distance downstream, passed through the center of a town engaged in war industries. Apparently no one had ever put together the chain of circumstances which could result in a conflagration that would destroy not only the entire refinery, but also threaten the existence of the town and its production of war materials.

We have inspected many terminals and marketing stations with truck loading racks (where spills frequently occur and fires often start) located directly upgrade from batteries of horizontal product tanks set up on unprotected steel supports, fitted with vents of such inadequate size that the tanks would rupture if exposed to severe fire; this together, with other tanks and a dock or waterfront below, with no retaining walls or curbs to catch spills or deflect spilled product from areas where a small amount of fire occurs, could do a great deal of damage.

We can cite a recent fire involving old-style agitators with unprotected steel skirts. The effect of the fire caused the unprotected skirts to buckle, the agitators to collapse, and the burning products to run downhill towards major units in a refinery.

We believe, gentlemen, that one of the prime lessons learned in this work has been the great need for oil companies to study grade conditions around their plants and to consider how oil spills might originate upgrade from important installations—and to provide means for handling these spills if they occur—and to limit fire damage when three or four things go wrong at the same time.

Static Electricity

In spite of all the educational work done by the American Petroleum Institute and other agencies concerning static electricity, we still find over-shot pumping connections in agitators and tanks. If a petroleum liquid is pumped into a container at a point well above the liquid level, the spray of oil that is formed as the liquid splashes down to the oil surface below creates heavy charges of static electricity. Under favorable conditions, the sparks which are caused thereby produce explosions and fires. Every operator should assure himself that all inlet connections to tanks or other atmospheric vessels are submerged.

Fire Schools

My comments so far have dealt with problems of operation, installation, and design which affect the fire security of petroleum facilities. Many of you are probably informed about the fire school which was held in this city last May by the PIWC Great Lakes Regional Committee. In my opinion, there were two outstanding observations to be made from the excellent instruction which was received there. All who attended the school will agree that the fire-fighting facilities in oil properties should be extended to include greater recognition of the value and use of water fog. Aside from its value as an extinguishing agent, the use of water fog to protect fire crews is an outstanding development. In almost any fire around an oil property, it is often essential that some valve within the fire zone, or close to it, should be closed. The school demonstrated the utility of water fog as a means of protecting a fireman and advancing him into the fire zone for the purpose of closing valves.

Fire Drills

The Chicago fire school was an excellent demonstration of the highly coordinated action of the fire crews. This brings up the subject of fire drills. Despite the excellent work which has been done by many, there is a wide field for improvement in fire-brigade organization and training within oil-company properties. In many properties, particularly those of the marketing division of the industry, the plant operators have had little training. These fellows need to receive broad instructions in fundamentals. Thereafter their training programs will never be complete without the extensive use of "problem" drills. After proper instruction, the men should receive workouts on specific hypothetical fires. Their methods and operations in these drills should be very carefully studied and analyzed by their supervisor. At meetings which follow, these men should be shown where mistakes occurred and how they should be corrected.

Management Responsibility

We recognize that the primary responsibility for plant protection rests with management. In the final analysis it is the operating companies who must take the necessary precautionary measures to protect their plants. The Petroleum Administration can assist such programs by rendering technical advisory guidance. Today, effective wartime fire protection is being achieved by the close cooperation of management and governmental agencies. Immediately following the attack on Pearl Harbor, this country undertook the tremendous task of organizing itself on a wartime basis. The confusion which characterized the period following Pearl Harbor has largely disappeared.

Spheres of responsibility and activity between branches of the armed services and governmental agencies have been defined to eliminate a duplication and overlapping of effort. Periods between inspections of petroleum facilities have been lengthened to conserve manpower and reduce the number of entries into plants. As the overall security status of the industry improves, we hope still further to lengthen the periods between inspections.

Today we find various branches of the armed services, the Petroleum Industry War Council Committee on Protection of Petroleum Facilities, the American Petroleum Institute, and the Petroleum Administration for War all working together with the industry as a team to reduce fire losses and insure a continuous and adequate supply of oil for our war program.

The degree of cooperation and compliance by management to the recommendations of this team has been excellent. There is a united front at home in the fight against fire.

Oil Is Ammunition

Every flying plane requires 50 gallons of gasoline per hour per motor. A four-motor plane requires 200 gallons per hour. The average production of oil wells is 14 barrels per day; there are 400,000 oil wells in the United States. It requires the production of 14 average oil wells to keep one four-motor bomber flying 10 hours per day.—WRIGHT D. PATMAN, *member of House of Representatives from Texas.*

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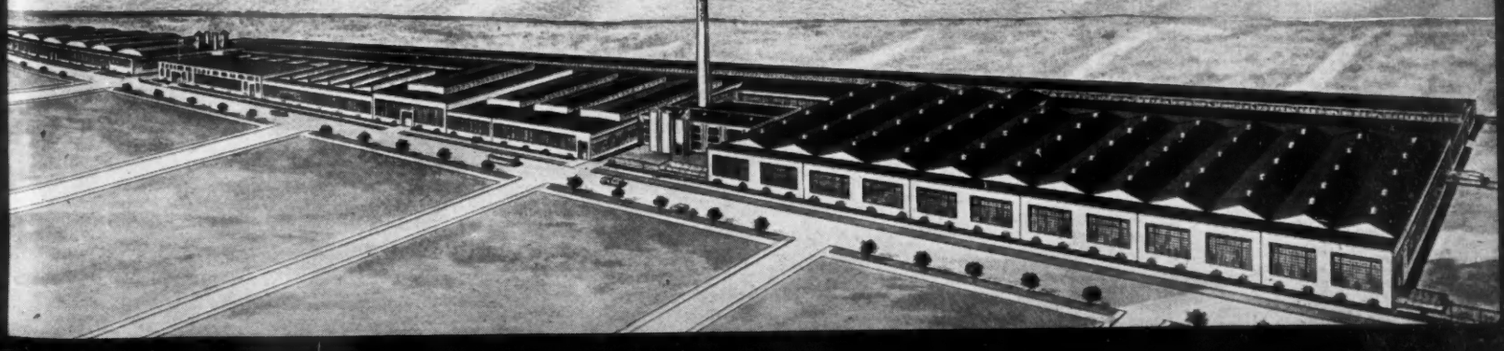

PRACTICAL OPERATING *Hints* FOR THE DRILLING RIG

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1. *LIGHTING*

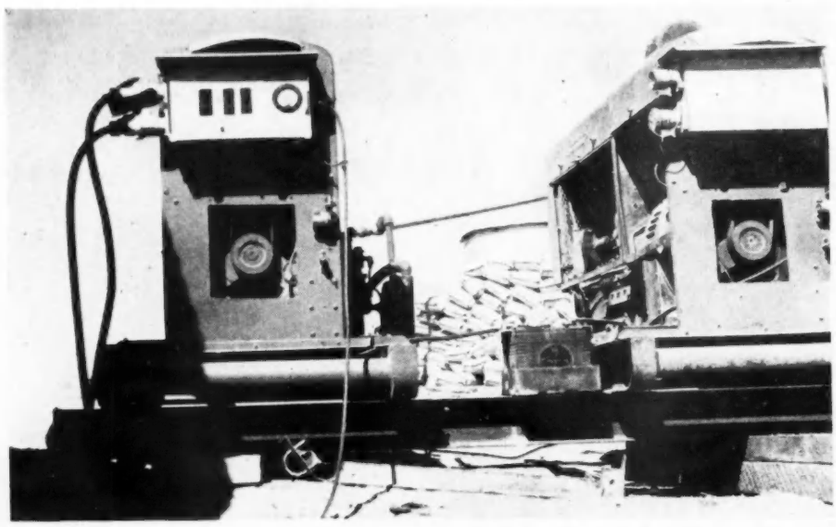
Extensible Cables Serve Dual Units

PROVISION of dual generator units, especially on deeper operations, is considered necessary whenever such equipment is available, it being customary to wire each unit into an individual switch control panel and thence to the lighting and auxiliary power distribution lines.

One company, setting up two engine-generator sets, simplifies the wiring and reduces the cost of the set-up by mounting the units on a single base, with the twin cables leading to the wiring harness left long enough to reach the terminals on the outlet box of either unit. Long-contact sockets are used in these boxes, so that, to change from one unit to the other, it is necessary only to pull the terminal plugs on the wires from one pair of outlets and insert them in the other.

The time required to make the change is but little longer than the throwing of a switch, and the shift is usually made when one unit goes down and there is no stoppage of illumination other than that already caused by the difficulty which prompts the change.

When alternating the units to equalize wear, or to insure proper functioning, the lead wires are usually changed during the day, so as not to involve even momentary interruption of light on the rig.



Special outlets on power panels permit change of heavy cable plugs to alternate load between generator units and simplify wiring harness by removing need for extra switch and bus panel.

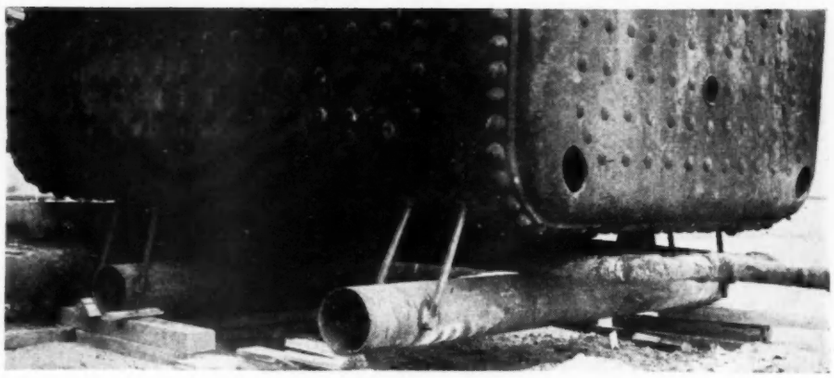
2. *BOILERS*

Unit Burner Rest Insures Right Fire

POOR steaming and even serious damage to the boiler can result from shifting of the burners due to sagging or slumping of the support on which they are carried. If the burner assembly be carried on the same transverse members as support the forward end of the firebox, no shift is permissible, and uneconomical firing may result.

One contractor mounts the burner assembly on two transverse members of scrap 6-inch pipe, holding them the proper distance below the boiler by carrying them on paired brackets of 3/4-inch round steel, welded to the firebox shell and to the pipe in such a position as to hold it properly spaced.

Burners so supported are fixed relative to the tubes, and the proper flame, once adjusted, can be carried throughout the drilling campaign. To remove the entire burner assembly, the supports are cut away with the torch, unless the reconditioning program calls for new tips, in which case they are unscrewed from the supporting loop, and it is then pulled out through the gap below the boiler shell.



Scrap pipe, adjusted to hold burner spider at proper height in firebox, is welded to shell with short rods which may be cut when assembly is to be removed, enabling burner servicing.

3. *MUD HANDLING*

Reinforcement Aids Skew Line Tie-In

WHEN it is not feasible to tie in two or more mud lines to the standpipe main at right angles, support for the junction and strengthening of the oval section of pipe stressed by the dual streams may be secured by attaching a spud or nipple on the straight run opposite the entry of the angle line, and by carrying gusset plates across the junction and well down both sides of the lateral.

By placing these gusset plates at right

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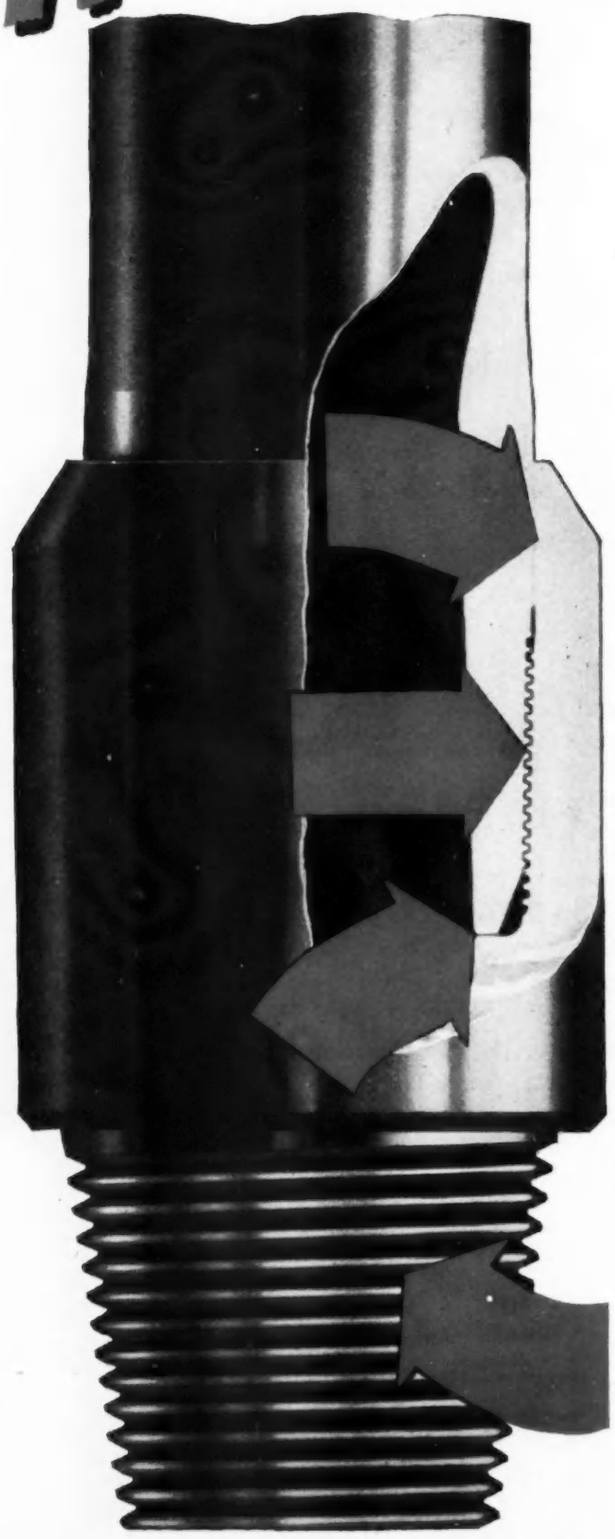

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The Gauging Shoulder—effects a seal which is an added protection against leakage and failure.

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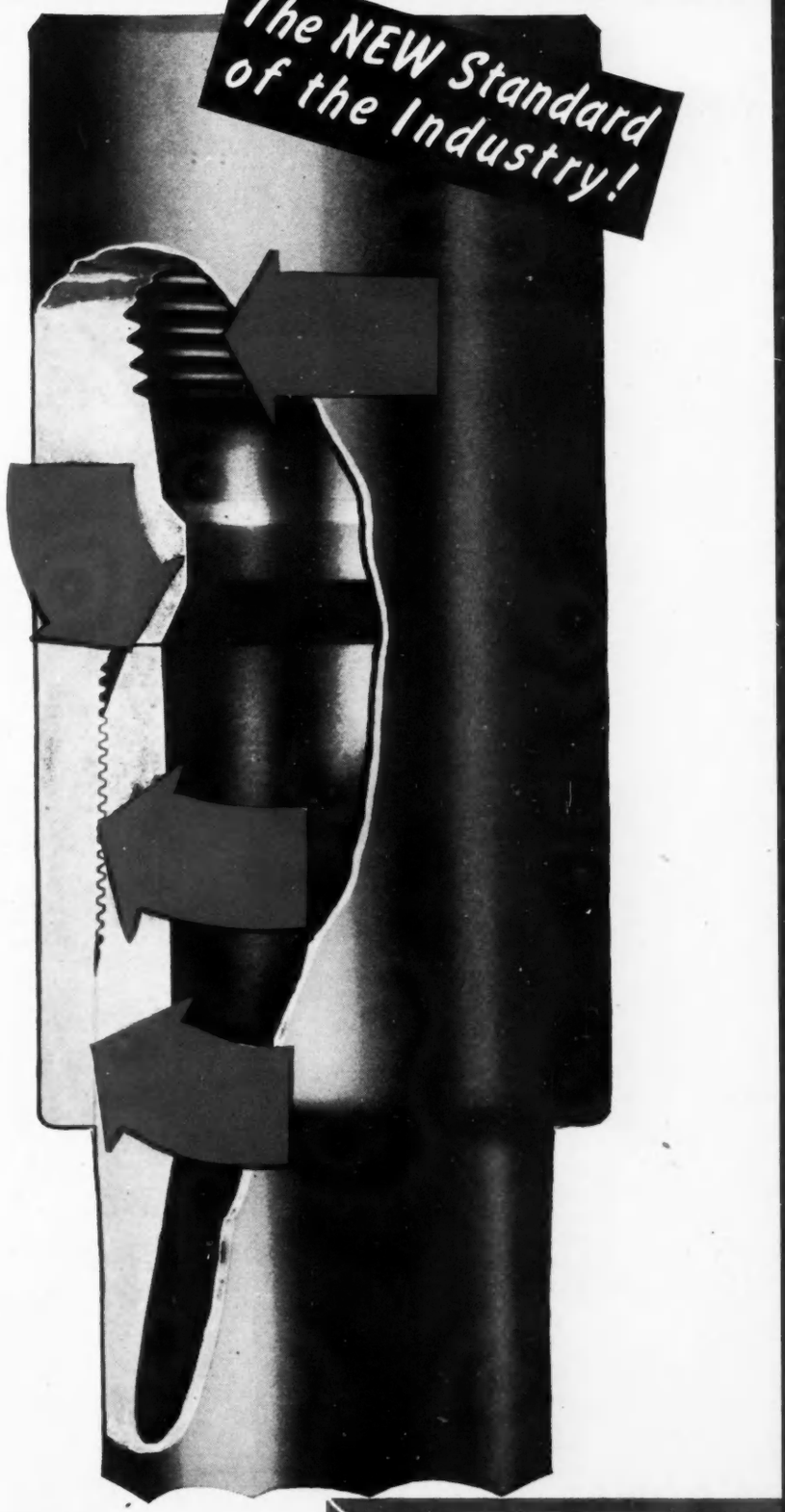

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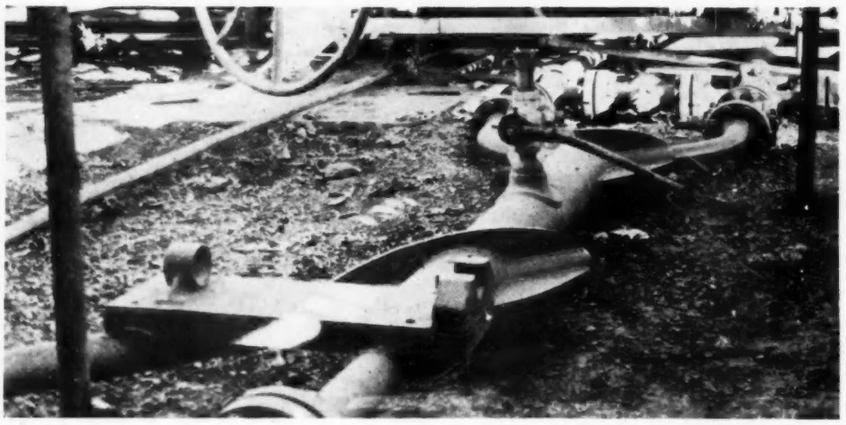

Overstressing and possible rupture of main mud line is prevented by welding extension stub beyond inlet of branch, and then carrying full support of reinforcing plates across to stub.

angles to the plane of the intersection as well as lying within it, the junction can be made so rigid that it is effectively safeguarded against expansion and vibration stresses, and the change of direction of the high-pressure stream is made without damage to the main.

If the extension nipple be opened into the line, instead of welded blind on the outside, the fluid column pocketed within the nipple serves to take the brunt of the abrasion set up by the change in direction of the mud-laden stream, and the pipe wall at this point therefore does not wear away more rapidly than other sections of the mud system.

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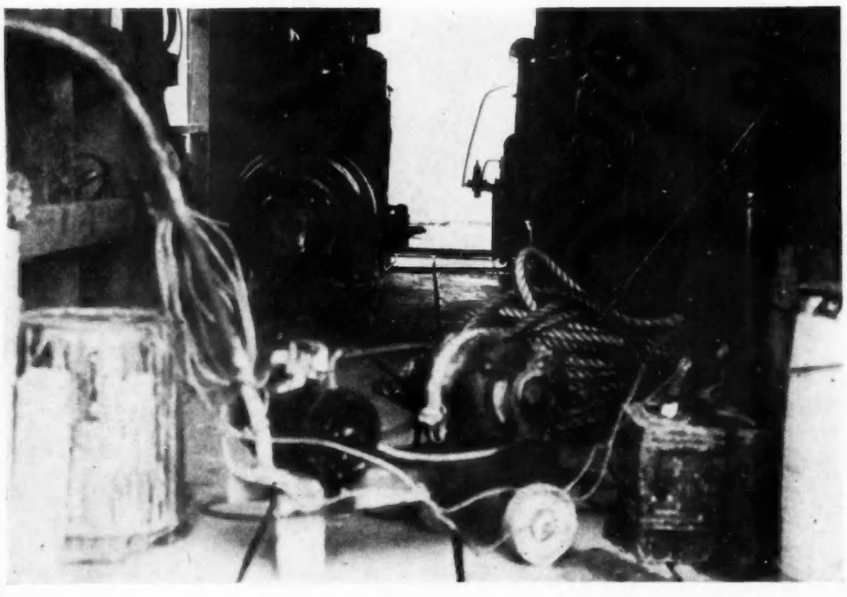
On a light truck as base a motor of the proper voltage characteristics to be driven from the usual rig-lighting circuit is V-belt connected to a salvaged automobile 6-volt generator.

Wire leads from the generator are equipped with conventional spring clips for attaching to the posts of the battery. Simply plugging in the service leads to the motor of the unit puts it into operation, the run being continued until the battery being charged shows the proper gravity on the tester.



Light truck supports motor of proper voltage, V-belt connected to 6-volt generator for maintaining full charge in starting and other auxiliary batteries around rig without special equipment.

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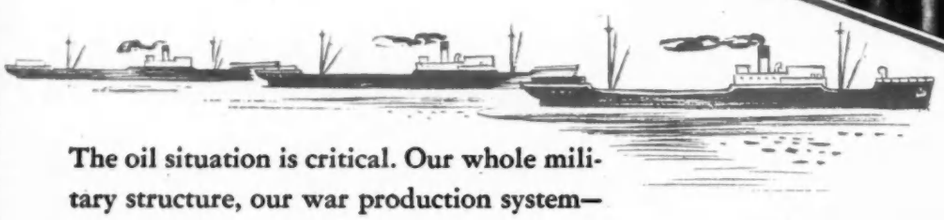

The oil situation is critical. Our whole military structure, our war production system—both are menaced and face possible collapse unless the demand for MORE oil is met. It *will* be met—that's the American way!

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☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

POST-WAR planning assumed a major role in Washington developments last week, with War Production Board announcing that it is preparing to spearhead the reconversion of American industry to peacetime operations while a House committee delved deep into the problem of over-all policy for the disposition of war plants built by the government.

So far as Secretary of Commerce Jesse H. Jones is concerned, the oil, rubber and other facilities constructed with Reconstruction Finance Corporation money will be sold to private industry but, with his usual acumen, he warned that there will not be many big bargains.

While the country's industry continues to strive to greater war production, surpluses of materials and machinery destined for war but suitable for peacetime use are beginning to appear, and the Army Air Force already has issued an attractive catalog of material and equipment which it is prepared to sell.

So far, however, there have been no surpluses reported of oil products, nor are any anticipated until the end of the war is definitely in sight.

The post-war world came in for consideration, otherwise, also, with Senator Ralph O. Brewster of Maine demanding that the government quickly adopt a foreign oil policy to be adhered to after the war, and preferably one in which American oil interests will be supported in their foreign activities rather than one calling for government development of ex-continental reserves. (See page 7.)

On the basis of an article appearing under his name in a national magazine, in which was divulged information regarding Petroleum Reserves Corporation plans which was never released to the press, the House Oil Committee may call Ickes before it to tell just what PRC is all about.

The suggestion was made after Russell B. Brown, counsel for the Independent Petroleum Association, agreed with Representative Wolverton of New Jersey that the charter of PRC might be interpreted as giving it power to engage in the oil business domestically as well as abroad.

House Told U. S. Has More Oil But Restrictions Prevent It Being Sought

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House Committee May Question Ickes on PRC Plans

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Post-War Plans Assume a Major Role in Week's Activities

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By B. F. LINZ
Washington Correspondent

☆ ☆ ☆ ☆

The committee also will call OPA officials to explain wherein their figures on production costs, on which they have refused to raise the ceiling, differ from those of the industry.

Agitation over the Canol project subsided to a mere murmur pending its revival when the Truman committee questions Lieutenant General Brehon Somervell at some future date, but Representative Poulson of California urged that the Army turn its excess Canol equipment over to the Navy, to be used in a test of Alaskan oil possibilities.

The price situation also remained static, the next big development due to come in the House December 13, when the Disney Bill, withdrawn from committee by petition, will come up for consideration.

United States Has Not Reached End of Oil Discovery Possibilities, House Is Told

Challenging the "defeatist" attitude recently displayed in some administration quarters, that we have reached the practical end of oil discovery possibilities in the United States, Russell B. Brown, general counsel for the Independent Petroleum Association, told the Lea Oil Subcommittee of the House December 3 that given a proper crude price there is no reason to believe that sufficient new oil cannot be discovered to carry this country for a number of years.

Brown, the first of a number of independent representatives to be heard, told the committee that the current ceiling was based on prices which had been hammered down by the major buying companies, a "mistake in judgment on their part," which the companies now recognize but which "has been frozen into the oil operations by the government."

"It is not fair to say that our domestic industry can no longer be depended upon to supply the major part of our country's petroleum requirements," he asserted. "We must first give the industry an opportunity, under conditions that are normal to its operations, to demonstrate its abilities before we turn to the alternatives that have been suggested."

The oil ceilings, he testified, are not in conformity with provisions of the price control act contemplating "fair and equitable prices that will assist in securing adequate production of necessary commodities," and "the artificial restraints now imposed are the product of administrative interposition of philosophies foreign to the intent and words of the law as passed."

Reviewing the frustrated efforts of the independents to secure consideration of their needs from the war agencies, Brown told the subcommittee that "the producer is now convinced that he must look to Congress for the action which will stimulate the field activity that must come, and come soon, if this nation is not to undergo a shortage of petroleum so great as to be demoralizing to the entire people.

"That is not a mere possibility" he insited. "It is inevitable unless the producer gets to work soon. Already, great damage has been done. Already, much valuable time has been lost. It takes many months to obtain results from a campaign of exploration of the kind we have needed for several years."

Least Effective Way

The administration, he said, has adopted the least effective of the two ways open to it to meet the situation, by urging the industry to develop more oil while withholding the means for exploration, instead of stimulating the production of existing wells and encouraging wildcattng.

The number of wells drilled, he pointed out, is less important than the type of wildcats developed, and most of the exploration in recent years has been in the vicinity of known large fields, where there is a good chance of uncovering small pools, rather than remote from settled area as has been the practice in the past.

"Because discovery effort has failed to yield important results in the past two years, some of the prophets now assert that we have neared the end of the trail; that we shall have to rely forever upon the oil resources of foreign countries and upon substitute motor fuels from coal and oil shales," he added.

This thinking, Brown declared, was probably responsible for the development of PRC, whose description by Representative Wolverton of New Jersey as a "typical Delaware corporation," was amplified by Congressman Brown of Ohio as, because of its government basis, a "double-barreled affair."

Because much of the South American crude is heavy fuel grade, Brown said, there is a definite limit to the amount of oil which can be imported from that area for gasoline-making purposes.

"The oil resources of the United States still constitute the principal reliance of the citizens of the United States," he said. "That applies equally to private consumers and to industries and to the military program as well. Yet the attitude of certain persons in government is one of permitting the supply from our own resources to decline through lack of effort, and to rely

upon the hope that somewhere in the world, somehow, the needed oil will be produced and brought to our markets. Such a program is unrealistic, short-sighted and productive of great injury to the entire economy of our people."

Brown commented that a recent article in the American Magazine under Ickes' name voices a philosophy in favor of government anticipation in foreign oil development and of government ownership of interests in private oil companies.

"The administrative agencies of our government," he concluded, "are in agreement that there now is a shortage of crude petroleum; that there is need to correct this shortage by increasing our supply.

"The only disagreement is on the method to accomplish this increase. On the one hand you have the experience of a successful industry supported by a federal agency to whom has been delegated the responsibility to insure the supply needed. On the other you have positive denial of the remedy suggested. This denial is effective to frustrate our every effort. In making this denial they recognize the need but ask for the application of some untried experiment.

"The legislative branch of our government could and should break this deadlock."

Recognizing that opposition to an increase in ceiling prices is based largely on a determination to add nothing to the profits of the major companies, Congressman Brown asked if the independents would be willing to accept a price increase covered by a provision that all of the money received from the increase, after allowance for a "fair" profit on operation of, say, six percent, should be required to be spent for exploration and development and if not so spent be recaptured by the government. The IPA counsel said he could accept the principle outlined by Brown and would be willing to cooperate in the drafting of that type of legislation.

PAW Merges Production And Reserves Divisions

Merger of the Reserves and Production Divisions of PAW was announced December 4 with Don R. Knowlton, director of production, to head the expanded organization. The consolidation followed the transfer last month of William B. Heroy, director of reserves, to the directorship of the Foreign Production Division. It was explained that the work of conservation and exploration to which the Reserves Division devoted itself has become so important a part of the production program in the past year that it was considered advisable to bring the two groups together. The entire personnel of the Reserves Division will be moved to the production office both in Washington and the field.

PRC Mission on Way to Middle East

It was indicated last week by PAW that Petroleum Reserve Corporation's mission to the Middle East has finally gone to the Mediterranean after sometime spent at Miami, Florida, awaiting transportation. Members of the mission are E. DeGolyer of PRC, William E. Wrather of the Geological Survey, and John H. Murrell and C. S. Snodgrass of PAW.

Abandonment of Canol Project Urged by Poulson

Repercussions of the Truman committee investigation of the Canol project were heard in the House of Representatives last week when members from the northwestern states protested the failure to explore the Alaskan reserves and recommended that the Army turn its oil activities over to the Navy.

The matter was brought up by Representative Norris Poulson of California, who declared that responsibility for the whole project lay with Lieutenant General Brehon Somervell and not on his subordinates and held the Navy partly to blame because of its failure to develop the Alaskan reserves.

Poulson urged that "we salvage from this great mistake as much as possible and turn our efforts toward something constructive, the development in American territory of an oil reserve which leading oil experts recognize has a far better geological setting than an untested oil area either in Alaska or on the North American continent."

Asserting that the Army and Navy should cooperate, the Congressman told the House that the Navy, "which at the present time possesses the cream of American oil industry in its personnel known as the Seabees, could do a most efficient job of testing and developing this oil reserve. As a real test of cooperation, the Army should turn over immediately to the Navy any excessive wildcatting equipment which it now has available in the Canol area to be used in the testing and development of the Alaskan naval reserve."

Poulson, answering a question by Representative Compton I. White of Idaho as to the Elk Hills reserve, criticized the abrogated contract between the Navy and Standard Oil Company (California), leading Congressman Warren G. Magnuson of Washington to explain that the Naval Affairs Committee, of which he is a member, is currently investigating that situation.

"I have no doubt that the committee and the Navy Department are going to decide all points in dispute in favor of the conservation of the Elk Hills reserve," Magnuson said.

"I may say that the Navy is in process also of attempting to find out just what we have in the so-called Point Barrow reserve, not for the purpose of developing it, because, as yet, we do not need it. The time may come when we will need it, but we are going to keep it for the Navy."

Jones Would Sell Plants But Proposes No Bargains

Development of an over-all policy for the disposition of government-owned war plants which, among other things, would prevent the establishment of monopolies, was urged before a House committee November 30 by Secretary of Commerce Jesse Jones, under whose administration whole new industries have been built up.

The disposal of huge surpluses, not only of manufacturing plants but of Army and Navy stores and real estate now used for training and other purposes, Jones said, is a major problem of post-war conversion to which consideration should be given now.

Jones reported that Reconstruction Finance Corporation is now engaged in a survey of the plants financed by Defense Plant Corporation, looking toward their disposal to private industry.

The government today, he disclosed, is a big factor in many lines of production, controlling approximately 55 percent of the national output of aluminum, 8 to 9 percent of the steel producing capacity, about 90 percent of the aircraft production facilities, and practically all of the synthetic-rubber production.

As a result of the administration's rubber program, he told the committee, the United States now could produce "at least a third more" synthetic rubber than the pre-war consumption of natural rubber, and added that there are indications that synthetic could be produced just as cheaply as we could purchase natural crude at pre-war prices and that it would be just as good.

Jones warned that those interested in the acquisition of plant facilities or surplus stocks should not expect "too many bargains," and indicated that, so far as the facilities under his control are concerned, the selling price will have some relation to the cost of production.

The secretary told the committee that RFC subsidiaries are in a position to sell plants and strategic materials but, while he said the latter are being sold every day, he did not disclose whether any negotiations have been entered into for the transfer of manufacturing facilities.

Watts Urges Cooperation In Materials Program

PAW Director of Materials Frank Watts has instructed district directors that Direction No. 1 to WPB Priorities Regulation No. 18, issued November 20, will require complete cooperation from equipment manufacturers, distributors, suppliers and operators to avoid undue interferences with production and construction programs, particularly with respect to Group B items.

Watts pointed out that the direction requires that purchase orders for Group A and B items for delivery during the first six months of 1944 be placed with manufacturers before January 1, and that purchase orders for material required for the last half of next year be placed before March 1, 1944.

The object of the direction, he explained, is to assure delivery of the listed items without delay by requiring major purchasers to place orders sufficiently far in advance to permit detailed scheduling of the manufacturing plants, in return being guaranteed scheduled delivery of their requirements.

Operators who are unable to make long-range plans are adversely affected, since the limited manufacturing capacity for many items will make it difficult to obtain delivery of materials by the time they are required for use.

Group A items covered by the direction include internal-combustion-engine accessories and components as follows: Camshafts, carburetors, crank-shafts, electric starting motors, fuel-injection equipment, generators, magnetos, mechanical governors, piston rings, pumps, radiators, automotive-type valves and heavy-duty automotive-type axles, brakes, tires, transmissions and wheels.

Group B includes: Anti-friction bearings, steel boilers (land and marine, of 100 pounds or more pressure per square inch), compressors, diesel engines, fluid

power systems, heat exchangers, high-pressure blowers, industrial type wet cell batteries, electric motors and generators, electric motor controls, steam turbines, turbine generators, control valves, high-pressure plug, steel, safety and marine valves, and industrial and marine pumps.

Three specific exceptions to the general provisions of the direction are permitted, as follows:

1. The direction does not apply to either Group A or Group B items when required for maintenance or repair purposes or as operating supplies.

2. It does not apply to orders placed with or by distributors or suppliers who take actual delivery of the materials for resale.

3. It does not apply to orders for Group B products where all orders for any single Group B item, placed by purchaser with a single manufacturer for delivery during the same calendar quarter, have a total value of not exceeding $10,000.

It was pointed out, also that the direction does not apply to delivery orders for used or second-hand products.

Procedures have been provided by WPB for placing emergency orders after the deadlines specified in the regulations. Applications in triplicate, naming the producer with whom the purchase order is to be placed, must be filed with WPB, but may be done so through PAW, which will serve in an expediting capacity for operators and prime contractors performing petroleum construction contracts.

Parten's Final Report Traces Line-Building Progress

PAW last week released the final report of J. B. Parten as director of transportation, tracing the development of the wartime transportation system from Pearl Harbor to the current time, when PAW is preparing shortly to go out of the pipe-line-building business.

By next spring, when all pipe-line projects are completed, the East Coast will have an overland capacity of about 1,625,000 barrels a day and sufficient capacity will be available throughout the country to distribute, with only a minimum use of ocean tankers, the total volume of oil that can be produced within our borders.

However, he warned, domestic production will not be enough next year to meet indicated total requirements and it is estimated that before the end of 1944 tanker imports will exceed those of the pre-war period.

Gross Hints Big-Inch Payroll Was Padded

Another Congressional investigation threatened this week, following charges by Representative Chester H. Gross of Pennsylvania that payroll padding and other irregularities characterized the construction of the Big-Inch pipe line.

From York, Pennsylvania, Gross announced he would ask for a thorough investigation of the Reconstruction Finance Corporation, which furnished the funds for construction of the line, explaining that he had examined transactions of the Defense Plant Corporation, under whose immediate jurisdiction the project came, after receiving numerous complaints of waste in the construction of Big-Inch.

At Least Some Prices Can Go Up

A new record bonus for the privilege of drilling for oil on federal land was established November 29, when Stanolind Oil & Gas Company submitted a bid of $26,216.21 per acre for 1.11 acres of land in the Elk Basin (Montana) field, it has been announced by the Interior Department.

The offer was nearly five times the previous record of $5800 offered by the same company as a bonus bid last August on another section of the same field.

The bid was received in the offer of seven parcels of land containing approximately 72 acres, which brought a combined high bid of approximately $615,500, or an average of about $8000 per acre. Stanolind was high bidder on six of the parcels, and Ohio Oil Company topped Stanolind by $13 to make a high on the remaining parcel.

OPA has not been heard from on "holding the line," nor PAW on spacing.

Ickes Urges Manpower Be Brought Back to Industry

An urgent appeal to the industry to develop its manpower and technical equipment resources, looking toward the drilling of 5000 wildcats next year, has been issued by Ickes.

Pointing out that the industry will drill only 3400 of the 4500 wells asked for this year, Ickes admitted that it will not be possible to reach the 1944 goal of 5000 unless the current shortage is overcome, yet the only way to overcome the crude shortage which the country faces, Ickes says, is to step up the exploratory program.

Ickes pointed out that after the outbreak of the war, geophysicists and other trained workers began to leave exploratory activities for duty in the armed forces or other types of work. The loss has been minimized by the War Manpower Commission's classification of such workers as essential, he said, but it is imperative that as many as possible be brought back into the oil industry.

Weather Already Affecting Eastern Fuel Supplies

A race with the weather to provide the East with sufficient kerosine to carry it over the winter was revealed December 1 by PAW in a report disclosing that lower temperatures already are having an effect on inventories which, during the week ended November 27, dropped from 52.3 to 49 percent.

Gasoline stocks increased from 39.5 to 40.4 percent during the week and heating oil stocks from 64.2 to 65.1 percent, but industrial oil supplies declined from 76.3 to 75.4 percent, it was reported.

Ickes disclosed that the current situation in kerosine, in contrast to last winter, is not due to a lack of transportation but to a shortage of the product itself, and said that refiners already have been called upon to adjust their yields to produce a greater volume.

An unusually favorable pipe-line movement brought deliveries into the East to 482,457 barrels daily, but Davies warned that this cannot be maintained after the advent of cold weather. However, he said, the products line will come into operation shortly after the turn of the year, only 14 miles of pipe now remaining to be laid.

Tank car deliveries during the week averaged 687,402 barrels daily, it was stated.

Oklahoma Navy Field To Be Resold to Owners

The original owners of 532 acres of Oklahoma land taken by the Navy by condemnation proceedings for an air field may benefit from the discovery of oil on the property.

Since the presence of derricks in the vicinity of the land makes its use as an air field impossible, Secretary of the Navy Knox has asked the House Naval Affairs Committee what he should do with the property, suggesting that it should be returned to the owners who were forced to sell it to the government.

The land, near Oklahoma City, was acquired at a cost of $46,000 and about $120,000 was spent on development before oil was discovered in the area. Knox proposes that the land be sold back at its original cost, plus the money spent for development.

That, he told the committee, is "the only fair thing."

Eight New Refineries For Making Lubricants

Eight major lubricating oil refineries, costing approximately $25,000,000, have been finished or are under construction to meet military and essential civilian demands for lubricating oils, it was announced by PAW December 1.

The program was initiated shortly after Pearl Harbor, when it became apparent that existing productive capacity would not be sufficient to meet the needs of a mechanized air and ground war, naval requirements and maritime shipping.

At the outset of the war, Ickes said, 74 refiners were producing about 105,000 barrels daily of base stocks for lubricating oils. Today's production is geared to keep pace with expanding military needs and to stockpile against the future as far as requirements can be foreseen at the moment.

The construction of new plants, as well as improvements in a score of operating refineries to remove bottlenecks and speed production, was undertaken by the industry with its own capital and no funds have been contributed by the government.

Four of the new plants called for construction from the ground up, while the remaining four involved major alterations to existing facilities. Five of the plants have been completed and are in operation and the others will be completed early next year.

It was disclosed that eight products were those of Sinclair Refining Company at Houston, Standard Oil Company of California at Richmond; Mid-Continent Petroleum Corporation at Tulsa, The Texas Company at Port Arthur, Quaker State Oil Refining Corporation at Emlenton, Pennsylvania; Sun Oil Company at Marcus Hook, Pennsylvania; Champlin Refining Company at Enid, Oklahoma, and Gulf Refining Company at Port Arthur.

Canol Cost Would Pay For All California Wildcatting During Past Ten Years

The $130,000,000 spent on the fantastic Canol project in Canada to develop 3500 barrels of production daily, is an amount that would cover the entire cost of all the wildcats, including 1500 dry holes, drilled in California in the past 10 years in the discovery of a billion and half barrels of oil. The discovery of more oil in California is one of the most urgent things that must be done. There is still more oil to be found in California, but it will cost more money. Unless prices are increased now to stimulate development, reserves will be so depleted that only a drastic boost in prices—perhaps several dollars per barrel, as contrasted with a tenth of that amount if we act now—will be required to find and produce the oil that will be needed. Subsidies to provide such costs will not work.

The foregoing are among forthright expressions of R. E. Collom, vice president of Continental Oil Company, in an address on the California oil situation he delivered before a meeting of the Right Of Way Group in Los Angeles on December 1.

The situation in California, Collom said, although more aggravated is typical of that in the olifields of the Nation as a whole. The industry is living on its fat.

Gasoline Shortage

The opening chapter of the paper was devoted to stressing the suddenly developed gasoline shortage with which the state is now confronted, with storage supplies almost at the point of exhaustion.

"Assuming that the above-ground storage of petroleum products has been reduced to the economic working minimum, which is in fact the case within a range of weeks," he said, "then current supplies thereafter are directly related to the rate at which the oilfields of the state can be brought to produce.

"It must be obvious that the oilfields are not producing at a sufficiently high rate or we would not have had the recent excessive withdrawals from storage.

"The known oilfields of the state are estimated to contain an underground supply or reserve of 3 billion barrels of oil. It is estimated that the production of 1943 will be 275,000,000 barrels. Production in 1942 was 248,000,000 barrels.

Producing To Capacity

"The oil fields of the state are producing to capacity; that is, there are about 85 flush or semi-flush pools that have their production restricted to what the engineers call a maximum efficient rate and there are 180 pools that produce to capacity, regardless. Under these conditions the state's capacity to produce in December will be about 825,000 barrels per day. There will not be this much oil produced because there are always a number of wells down. The actual production will come closer to 800,000 barrels per day.

"Two years ago, just before Pearl Harbor, we had a considerable overproduction in the state. The state demand in December, 1941, was 612,000 barrels per day. Oil was being prorated. Well potentials had been a big factor in proration. These well potentials, for purpose of trading and boosting allowables, frequently increased but seldom decreased. In December, 1941, the Umpire's office carried a well potential figure for the state of 3,800,000 barrels per day. With 4000 wells shut in and 17,000 producing on proration, potentials simply meant that we thought we had a hell of a lot of oil. In January, 1942, the initial estimate of the total maximum efficient rate at which all fields could be produced was 914,000 barrels per day. After that no one said anything about potentials.

"Actually all the oil wells in the state labored in November, 1943, to contribute to the daily quota about as follows: In the restricted group of pools, 2445 wells produced about 345,000 barrels daily, averaging 140 barrels per well, while 18,325 wells in the unrestricted group were producing 450,000 barrels daily, an average of 25 barrels per well.

"New wells are being drilled, old wells are being redrilled and restored to production, at the rate of about 7500 barrels per day. Production in all fields is declining at the rate of possibly 1 percent per month. Limitations on spacing, steel, all types of equipment and men to do the work have to varying degrees impeded development.

Need New Fields

"It should be apparent, however, that what the California industry needs is the discovery and rapid development of at least one major pool, a pool that would give a boost to the work of the 2445 wells in the present flush and semi-flush pools. I say at least one major discovery because no discovery of importance has been made in California in the past five years. There are only two fields in the state that could produce at the rate of 100,000 barrels a day, even if pressed to produce at wasteful rates, and there is a broad gap between Wilmington and the Coalinga group to the next highest 25,000 barrels per day class.

"Speaking of discoveries, there were some 950,000,000 barrels of reserves discovered in the five years previous to 1938. In 1938 an additional 546,000,000 barrels of oil was discovered. In the five years since 1938 about 180,000,000 barrels has been discovered. Of this amount 5,000,000 barrels was discovered in 1942 and an equally insignificant amount thus far in 1943. The state has produced over a billion barrels more than has been discovered in the past five years. The oil industry is operating on its fat. Oil is becoming increasingly difficult and costly to find.

Higher Prices Needed

"What is needed is more and more wildcats, wells, and in spite of price spirals and opinions of the guardians of OPA to the contrary, higher prices for crude to encourage wildcatting and the discovery of oil. Subsidies to wildcatters will not work in the oil industry. An increase of 35 cents to 50 cents per barrel in the price of crude oil would increase the price of gasoline possibly 1 cent a gallon. As I stated at the outset, the Armed Forces are using 50 percent of the supply and referring once more to Joe Doakes (the average citizen) and his "A" book, one can easily figure how much a 1 cent increase will mean to him per month.

"The situation in California although more aggravated, is typical of that in the oilfields of the Nation as a whole. Petroleum Administrator for War Ickes in a letter to OPA said:

"'My fear is that unless we are prepared now to permit some increases in oil prices in order to stimulate increases in our available supplies, our reserves will continue to be depleted at such a pace that only a drastic increase in prices—perhaps several dollars a barrel—will be required to find and produce the oil we are certain to need both during the war and after.'

"Strange how we have to fight to get the oil to fight with.

"There's Naval Reserve No. 1, 37,000 acres of oil land in Elk Hills in Kern County, where two years after Pearl Harbor the pumping beams of wells on private lands are peacefully bobbing and no one therein seems to know there is a war! Drilling of Government lands could easily add 50,000 barrels per day to the state's production.

"The Naval Reserve at Point Barrow, inside the Arctic Circle, reposes peacefully under its mantle of winter snow, presumably standing by for the next war.

"At Canada's Norman Wells, the Army decided to spend $130,000,000 for steel, material and labor to develop 3500 barrels of oil a day and transport it through 500 miles of pipeline to Whitehorse, on the Alcan Highway. One hundred thirty million dollars would easily drill all the wildcat wells, including the 1500 odd dry holes, which have been drilled in California in the last 10 years in the discovery of a billion and a half barrels of oil.

"There is still more oil to be produced in California and I hope I have convinced you that that is one of the most urgent things we have to do."

Tanker Withstands Torpedoes

The over-age tanker "Gulfprince", operated for the War Shipping Administration by the Gulf Oil Corporation, successfully dodged four torpedoes in in the Gulf of Mexico last May and was slightly damaged by a fifth, but had worse luck more recently in the Mediterranean, when one torpedo, smashing a main tank, disabled the vessel, it was disclosed by WSA December 2.

The report was one of a series of stories which are being released by the WSA on the war exploits of our merchant shipping.

After the Mediterranean attack, the 22-year-old tanker caught fire and the crew took to the lifeboats, making the shore ten miles away with no losses, although a gunner suffered severe burns. When the fire subsided, a Navy tug towed the vessel to the nearest port, where temporary repairs were made, and then to another port for complete overhaul.

In both attacks, the ship was commanded by Captain Peter J. Sigona of Port Arthur, Texas, who was awarded the Merchant Marine Distinguished Service Medal for saving his vessel in the first submarine attack.

Oil Stocks Declined in September Despite Record Production and Runs

More new records were piled up by the oil industry in September, with crude production reaching an all-time peak of 4,347,000 barrels daily, runs to stills advancing to 4,203,000 barrels, and demand increasing to 4,388,000 barrels, the Bureau of Mines disclosed last week in its monthly report.

The September production average topped that of August by 133,000 barrels and was 483,000 barrels, or 12.5 percent, above September, 1942. Most of the increase over August was recorded in Texas, with West Texas accounting for 73,000 barrels of the state's total increase of 117,000 barrels daily.

The bureau found that 957 oil wells were completed in September, against 827 in August and 836 in September, 1942. The 184,400 barrels initial daily production represented a sharp rise from August and compared with 181,200 barrels initial in September of last year.

The daily average demand for domestic crude was 62,000 barrels daily over the August figure, and to meet it 41,000 barrels daily was withdrawn from stocks of domestic origin. Total stock of foreign and domestic crude fell during the month from 247,094,000 to 245,192,000 barrels.

Crude runs to stills, the bureau reported, rose 109,000 barrels over the August figure. The gasoline yield rose from 37.3 to 38.1 percent and the distillate fuel oil yield from 14.3 to 14.7 percent, but the yield of residual fuel oil declined from 29.5 to 29 percent. stocks of finished gasoline declined by 1,478,000 barrels during the month and aggregated 59,186,000 barrels on September 30, or 10,100,000 barrels less than on the same date last year.

The bureau's "balance sheet" showed the production of 130,407,000 barrels of domestic crude during the month and 7,702,000 barrels of natural gasoline, giving a total output of 138,109,000 barrels.

Stocks at the close of the month included 236,287,000 barrels of gasoline-bearing crude in the United States, 8,905,000 barrels of heavy crude in California, 4,723,000 barrels of natural gasoline and 231,454,000 barrels of refined products.

Bureau of Labor Statistics figures placed the price index for petroleum and products at 63.2 in September, against 63 in August and 60.6 in September, 1942. The crude-oil capacity represented in the report was 4,622,000 barrels, indicating an operating ratio of 91 percent, compared with 89 percent in August and 83 percent in September a year ago.

Urge Surplus Materials Use for Refining Plants

Use of surplus material and equipment is being urged upon refiners and contractors by PAW as a means of speeding up construction of aviation-gasoline plants and special refining units.

Declaring that there are numerous "excess stock piles" throughout the country, Davies pointed out that two of the larger stocks of materials in universal demand by refiners, have been built up at Houston and Los Angeles, from which supplies can be secured, if necessary, in less than 24 hours.

This equipment, however, he said, is available only for aviation-gasoline plants.

PAW itself is making use of all available material and equipment it can find for the 100-octane plants, and has brought into use surplus steel valves and fittings, explosion-proof motors, insulated wire, industrial instruments, relief and control valves, engines, boilers, blowers, compressors, heat exchangers, generators, pressure vessels, pumps, tanks and turbines.

The Army is cooperating in the effort by furnishing PAW with lists of materials available as a result of the cancellation of ordnance projects after the material had been ordered and manufactured for them. The Engineer Corps similarly furnishes lists of surplus stocks, and the PAW redistribution section circulates such lists along with those developed by the canvassing of refineries, among contractors and refiners.

Michigan Board Favors No Change at Reed City

P. J. Hoffmaster, Michigan supervisor of wells, has under study a recommendation from the State Oil Advisory Board that present allowables be continued in the Reed City field, thus rejecting recommendations by University of Michigan engineers to reduce the field output from 21,000 to 13,000 barrels daily as a measure to stabilize reservoir pressures in the field. The proposed cut was opposed unanimously last week by producers.

Houston Geologists Hear Dr. Richard Russell

Dr. Richard J. Russell, authority on the physiography of the lower Mississippi valley and delta, and head of the department of geology at Louisiana State University, presented a paper on the "Quaternary Delta Succession in the Lower Mississippi Valley," at a special meeting of the Houston Geological Society November 29. His talk was the second in a series of ten special lectures on the society's current lecture schedule, sponsored by the American Association of Petroleum Geologists.

Dr. Russell has for the past three years headed a special research study of the Mississippi Valley alluvial deposits and stream channel changes, under the auspices of the Mississippi River Commission. In his talk he revealed some of his most important findings, based on study and interpretation of surface outcrops and exposures, more than 10,000 core sample sets, topographic mapping, and air photo mosaics.

He outlined the geological history of the lower valley and delta since Paleozoic time and presented interpretations of data bearing on fundamental geological theories regarding Quaternary and Recent events. He stated that his findings demonstrate that there were five separate changes in sea level during the Pleistocene, based on five cycles of dissection and deposition in the lower Mississippi valley. He has established the Tertiary surface within the lower valley area, and has mapped the pre-Recent surface topographically, to include tributary drainage patterns.

Next speaker in the Houston Society's special series will be Dr. Izequiel Ordonez, Mexican geologist, who will appear on December 17, to give an illustrated lecture on the "Origin and Development of the Volcano Paricutin," the history of which dates back less than 6 months.

Compact Commission to Meet in December

The winter quarterly meeting of the Interstate Oil Compact Commission will be held in Wichita, Kansas, at the Broadview Hotel, December 10-11.

Greater oil and gas recovery by cooperative field management, through petroleum industry engineering committees, will be a featured subject at the general session, Friday afternoon, December 10. Officers will be elected, standing committees appointed, and plans for the ensuing year completed at the Saturday morning session, December 11.

The commission's committees will be in session Friday morning and will make their reports at the open meeting Saturday.

Oil and Gas Commission of Arkansas Increases Staff

Several personnel changes in the engineering and geological departments of the Arkansas Oil and Gas Commission have been announced by Alec M. Crowell, director. From the Magnolia district office, Lloyd L. Jordan was moved to El Dorado as acting chief engineer to replace C. H. Thigpen, who has accepted a position with the United States Geological Survey at Tulsa. Emon E. Clark, petroleum engineer, has taken charge of the Magnolia district office, having been released from the Army in the enlisted men's reserve for six months in order to give the commission time to secure another engineer and train him. Harry P. McClintock, recent graduate of the University of Pittsburgh, School of Petroleum Engineering, has replaced C. V. Lisman, Jr., geologist, who has accepted a place with G. H. Vaughn at Dallas, Texas. Penn Shipbuilding Corporation of Beaumont, Texas, has released J. B. Webb, Jr., engineering draftsman, who will be located in El Dorado. The secondary-recovery survey of the commission, operating under the direction of Dr. George H. Fancher of the University of Texas, has released Steve Debord, Jr., to the East Texas Salt Water Disposal Corporation and replaced him with Henry Callaway, petroleum engineer of the University of Texas. Dr. A. A. L. Mathews of Texas A. & M. College has been added to the research staff of the secondary-recovery survey.

The Oil and Gas Commission is now seeking to increase its staff of engineers and geologists and two additions are expected to be announced shortly after the first of the year. Arkansas law requires that all technical personnel of the commission be graduate or registered engineers and geologists.

4,400,000 Barrels Daily Is Estimate Of Demand for Crude Oil in December

Domestic crude oil production of 4,400,000 barrels daily will be required this month to meet anticipated demand, it was forecast December 1 by the Bureau of Mines.

That output, the bureau stated, will be 518,600 barrels, or 13 percent, higher than actual production in December, 1942, when demand was abnormally low.

With motor-fuel demand in the third quarter of this year showing a gain of about 6 percent over the corresponding period in 1942, the bureau estimated that demand for the fourth quarter will be over 11 percent above last year, reaching 168,000,000 barrels.

"Gasoline demand has been considerably greater than was anticipated because of sharp upward revisions in the estimated amount required to meet expanding military and export requirements," the bureau commented. "The supply has been augmented by a rise in crude runs to record levels and by the upward trend in gasoline yields from a low of 35.3 percent in April to a high of 38.1 percent in September."

The bureau found that daily average crude oil production for the four weeks ended October 30 was 4,399,000 barrels, while total runs to stills was 4,150,000 barrels, and stocks of domestic crude increased at a rate of 70,000 barrels, indicating a demand for domestic crude of 4,329,000 barrels daily.

In September, it was pointed out, new records were established in production at 4,347,000 barrels daily, crude runs to stills at 4,203,000 barrels and a demand for domestic crude of 4,388,000 barrels, but data available for October and November indicate a further substantial gain in crude output, but a decline from the September runs and crude demand.

Demand Rises Sharply

"The demand for domestic crude petroleum has risen rapidly from an average of 3,775,000 barrels daily in the first quarter of 1943 to 4,000,000 barrels daily in the second quarter and to 4,287,000 barrels daily in the third quarter," it was stated. "During the first nine months of the year stocks of domestic crude petroleum declined by an average of only about 1000 barrels daily, so that production virtually approximated crude demand. However, stocks of refined oils declined by 16,000,000 barrels, or about 6,000 barrels daily during this period, and civilian consumption was restricted, so that the potential demand for crude was materially greater than the indicated demand."

The estimate for total motor-fuel demand in December is 54,500,000 barrels. Although this is 27 percent higher than the actual total demand in December, 1942, it was explained, only a portion of the increase is represented by a gain in military requirements, a considerable part of the difference being attributed to the abnormal low refinery demand a year ago that resulted from inflated sales prior to the effective date of nation-wide rationing.

Finished and unfinished gasoline inventories amounted to 69,219,000 barrels on September 30, and statistics of the American Petroleum Institute indicate a decline of approximately 900,000 barrels during October, with stocks at about 68,300,000 barrels on October 31, compared with 76,622,000 barrels on the same date in 1942. For the current month, the bureau estimates an increase of 4,700,000 barrels in finished stocks.

Direct sales of gasoline and imports are placed at 2,700,000 barrels, making an indicated refinery production of 56,500,000 barrels which is distributed among the several districts, as follows: East Coast, Inland Texas, Texas Gulf Coast, Louisiana Gulf Coast and Inland Louisiana-Arkansas, 27,480,000 barrels; Appalachian, 1,920,000 barrels; Indiana, Illinois, Kentucky, etc., 11,990,000 barrels; Oklahoma, 2,630,000 barrels; Kansas, 2,920,000 barrels; Rocky Mountain, 1,380,000 barrels; California 8,180,000 barrels.

Benzol and natural gasoline to be blended at refineries are estimated at 5,600,000 barrels. The application of an estimated 39-percent yield to the straight-run and cracked gasoline production of 50,900,000 barrels gives total crude runs of 130,500,000 barrels, or 4,210,000 barrels daily.

Crude for exports and to be used as fuel, and losses, is estimated at 7,900,000 barrels, giving an estimated demand for domestic crude of 136,400,000 barrels for the month, or 4,400,000 barrels daily.

Petroleum Electric Body Holds War Conference

P. M. Cordell of the Texas Electric Service Company was elected president of the Petroleum Electric Power Association at a round-table working conference held by the group last week in Dallas. The association's new vice president is Lewis B. Blalock, Texas Power & Light Company, Dallas. H. C. LeVois, Gulf States Utilities Company, Port Arthur, was elected secretary.

The conference heard a report from W. H. Stueve, power consultant for War Emergency Pipe Lines, on the problems and solutions in connection with furnishing electric power for the Big-Inch pipe line. He discussed the arrangements made to provide sufficient electric power, including such phases as how pump stations were fitted into localities where electric power was available, and arrangements for extension of facilities where electricity was not available, and finally the installation of electric equipment. Stueve related that consideration was given to all types of prime movers, and that electric power was selected from one end of the line to the other, after studying investment costs, operating costs, availability of material and the conservation of materials.

E. L. Robinson, Gulf States Utilities Company, Beaumont, presented a talk on the electric supply needed in the manufacture of petroleum products and petroleum by-products. He asserted that even if the synthetic rubber plants proved unsatisfactory, that the greater part of the material, especially in the butadiene end, could be salvaged. It would be possible, he declared, to switch most of the processes and equipment around so they could do other petroleum work.

P. M. Cordell presented a paper on the use of utility electric service in the drilling of deep wells in West Texas. Electric power has given very low costs in this region. Among the factors favoring electricity in this area, he said, was the scarcity of fuel and water. A special consideration is the fact that exceptionally hard drilling in the chert formation necessitates many round trips to change rock bits, a condition to which electricity lends itself in good fashion.

Utility representatives held a general discussion of the electric supply situation as it has affected petroleum and war work. It developed that no war project has been held up or has suffered from lack of electric power.

Texas Conservation Law to Serve as Model for Florida

J. Tom Watson, Attorney General of Florida, conferred in Austin last week with state officials and representatives of the oil industry concerning prospective oil laws for Florida. The meeting was sponsored by the Mid-Continent Oil & Gas Association, and besides the Texas officials attending, 15 representatives of oil companies were present. Wallace Hawkins of Magnolia Company, F. T. Baldwin of The Texas Compan, Herman Presler of Humble Oil & Refining Company, Charles I. Francis with The Pure Oil Company, John W. Slayton for The Atlantic Refining Company, and J. Y. Timmons of Sun Oil Company attended the conference. R. E. Hardwicke attended the meeting as attorney for the Petroleum Administration for War.

Humble Oil & Refining Company has recently brought in a well in the Everglades, and Florida finds itself without oil and gas laws. In order to familiarize himself with all phases of the industry so far as the legal problems are concerned, Watson came to Texas. He said that he was interested in a general conservation law, the tax laws, and the land laws that affect the oil industry, as well as regulations and orders issued by such boards as the Texas Railroad Commission.

Shell Buys Frankel Properties at Conroe

Shell Oil Company announced Deiember 1 it had purchased the properties of Frank and George Frankel in the Conroe oil field, Montgomery County, Texas.

The purchase was for 58 producing wells and approximately 1700 acres of land, and included the gathering system. The leases have a daily production of approximately 2700 barrels.

Although neither party to the trade announced the consideration, it was reported unofficially it involved around $8,000,000 cash.

Shell Oil Company in confirming the transaction, said the Frankel personnel in the field will be transferred to the company pay roll.

There have been recurring reports of other large oil deals in the Houston area, but none have been confirmed and one report has been denied. H. R. Cullen denied that he was selling his extensive properties to Humble Oil & Refining Company. This reported trade has been persistently cropping up but was emphatically refuted as "nothing to it."

Record Refinery Runs Boost Light Fuel and Gasoline Stocks, but Residual Withdrawn

Having further expanded refinery runs to the highest level in history, while maintaining near-record production of crude, the industry was able to make needed additions to the stocks of gasoline and gasoil and distillate fuel during the week ended November 27; but in spite of the extraordinary output of refineries, there was a further draft on seriously dwindling inventories of residual fuel oil. Over ½ million barrels of the latter product came from storage, leaving on hand 21 percent less than at this time last year.

Crude oil production was practically unchanged from the previous week in averaging 4,414,000 barrels daily in the November 27 week, and was 536,000 barrels or 14 percent higher than in the corresponding week last year.

The new peak reached by crude runs to stills was 4,261,000 barrels per day, the previous all-time high having been 4,227,000 barrels, recorded in late August this year. The new high was 69,000 barrels above the previous week's daily average and 521,000 barrels or 14 percent above the refinery runs a year ago, and 88.3 percent of potential refinery throughput was being realized.

Production of gasoline in totaling 12,638,000 barrels in the week of November 27 was 150,000 barrels larger than the week before and 1,301,000 barrels or 11.5 percent greater than output in the week ended November 28 last year. Stocks of that product were increased 984,000 barrels to 69,980,000, a quantity 4,648,000 barrels or 6.2 percent less, however, than the 74,628,000 barrels on hand a year ago.

Gasoil and distillate fuel production amounted to 4,379,000 barrels during the November 27 week, down 264,000 from the week before but 7 percent more than output in the corresponding week last year. Stocks of those lighter fuel oils rose meanwhile by 415,000 barrels to 46,187,000, an amount 4,008,000 barrels or 8 percent less than the 50,195,000 barrels reported for November 28, 1942.

Residual fuel oil production of 8,633,000 barrels in the week ended November 27 was 164,000 less than that in the previous week but 1,327,000 barrels or 18.2 percent more than output a year earlier. Inventories of residual fuel came down, nevertheless, by 519,000 barrels within the 7 days to 62,143,000 barrels, and then were 16,531,000 barrels or 21 percent lower than on November 28 last year.

Shortages Continue to Make Markets Tight

Scarcity of virtually all petroleum products continues to prevail throughout the country, and in many instances refiners are obliged to restrict sales to regular customers on the basis of former takings.

Continuing as a favorable feature of the general market situation, however, is the relatively good inventory position

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED Dec. 4	Nov. 27
Arkansas	78,450	78,350
California	789,750	800,050
Long Beach	31,100	30,600
Midway-Sunset	55,350	55,150
Kettleman Hills	41,250	41,000
Wilmington	97,500	98,400
Rest of State	564,550	574,900
Colorado	7,350	7,450
Illinois	221,100	219 050
Salem	28,850	27,550
Louden	35,950	34,800
Other New Pools	144,050	144,300
Old Pools	12,250	12,400
Indiana	13,500	12,500
Kansas	267,108	273,200
Kentucky	24,550	23,350
Louisiana	352,800	351,100
North Louisiana	78,800	78,750
South Louisiana	274,000	272,350
Michigan	53,750	50,150
Mississippi	49,300	49,350
Missouri	95	95
Montana	24,521	21,500
Nebraska	1,700	1,700
New Mexico	113,050	113,050
New York	13,050	13,550
Ohio	8,850	10,000
Oklahoma	322,600	325,800
Oklahoma City	50,250	50,700
Seminole Area	71,100	72,400
Rest of State	201,250	202,700
Pennsylvania	39,850	39,550
Tennessee	35	35
Texas	1,908,500	1,929,400
Upper Gulf Coast	521,250	524,550
East Texas Field	369,300	376,500
Rest of Eastern Texas	133,700	143,000
Lower Gulf Coast	193,500	197,350
Southwest Texas	79,300	80,100
South Central Texas	20,550	20,700
West Texas	357,000	359,800
North Texas	143,400	141,800
Panhandle	90,550	85,600
Utah	12	10
West Virginia	8,100	8,000
Wyoming	102,850	100,850
Total United States	4,400,871	4,428,090

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Week Ended	Runs to Stills Barrels Daily	Week Ended	Crude Stocks Barrels	Week Ended	Gasoline Stocks Barrels	Week Ended	Gas Oil & Distillate Stocks Barrels	Week Ended	Residual Fuel Oil Stocks Barrels	Week Ended
Highs:												
1939	3,910	8- 5	3,650	10-21	278,607	5-26	87,769	4-22	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	49,051	10-19	109,135	9-14
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	49,861	11-14	95,857	1- 3
1943	[1]4,436	11-13	[1]4,261	11-27	245,752	5-29	94,159	3-20	46,187	11-27	72,881	1- 2
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,723	4-15	105,397	4- 8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,561	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-13	232,191	1- 9	68,182	10-16	30,732	4- 3	62,143	11-27

TRENDS OF 1942 AND 1943

Trends in Week Ended:	Crude Oil Production Daily	Runs to Stills Daily	Stocks Week End	Gasoline Production Weekly	Stocks Week End	Gas Oil & Distillate Production Weekly	Stocks Week End	Residual Fuel Production Weekly	Stocks Week End
1942:									
January 3	4,038	3,961	244,440	13,797	92,987	3,855	49,357	6,918	95,857
January 31	3,871	3,848	250,740	13,292	97,810	3,817	40,674	6,640	91,189
February 28	4,016	3,675	259,373	12,131	105,635	3,799	34,547	6,813	88,285
March 28	3,820	3,667	263,208	11,663	105,624	3,661	31,756	6,344	83,045
April 25	3,581	3,506	257,073	10,535	102,897	3,287	29,240	6,869	81,107
May 30	3,877	3,522	255,023	10,478	95,355	3,034	31,384	6,993	79,628
June 27	3,719	3,581	253,364	10,713	88,396	3,549	32,851	6,615	77,304
July 25	3,691	3,658	249,262	10,864	82,281	3,647	35,966	6,796	77,816
August 29	3,964	3,697	249,007	11,300	80,831	3,850	42,060	6,875	78,034
September 26	3,909	3,802	242,785	10,954	80,550	4,215	45,954	7,094	78,943
October 31	3,901	3,731	239,266	11,153	79,159	.....	48,131	.....	79,166
November 28	3,878	3,736	234,850	11,269	78,854	.....	49,739	.....	77,796
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	4,679	245,752	10,656	83,937	3,798	32,274	7,672	67,682
June 26	3,955	4,015	242,657	11,092	79,589	3,876	34,044	8,126	67,960
July 31	4,133	3,788	238,420	11,127	74,977	3,765	36,363	8,478	66,877
August 28	4,196	4,227	236,170	12,420	72,525	4,351	37,928	8,732	67,250
September 25	3,344	4,156	233,013	12,206	70,024	4,608	40,328	8,560	66,659
October 30	4,383	4,176	237,219	12,813	69,297	4,642	44,591	7,968	63,838
November 6	4,389	4,079	236,937	12,172	68,698	4,287	44,776	8,135	63,551
November 13	[1]4,436	4,134	238,404	12,223	68,610	4,633	45,518	8,103	62,647
November 20	4,414	4,192	239,869	12,488	68,996	4,643	45,772	8,797	62,662
Nov. 27 1943	4,414	[1]4,261	.....	12,638	69,980	4,379	46,187	8,633	62,143
Nov. 28, 1942	3,878	3,740	[4]235,305	11,337	74,628	4,098	50,195	7,306	78,674
Change:									
In week	.....	+69	+1,465	+150	+984	−264	+415	−164	−519
In year	+536	+521	+4,564	+1,301	−4,648	+281	−4,008	+1,327	−16,531
In year	+13.8%	+13.9%	+1.9%	+11.5%	−6.2%	+6.9%	−8.0%	+18.2%	−21.0%

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, November 21, 1942.

of the East Coast district, in contrast with the shortages that prevailed before improvement of the transportation capacity into that region.

In the New York area some suppliers report comparatively comfortable positions with regard to gasoline inventories, although suppliers in some other East Coast centers say that supplies are tightly held and difficult to obtain. Stocks of light fuel oils are larger than at this time last year, and no serious difficulty is being encountered in filling orders. Inventories of residual fuel also are not causing much trouble.

On the Gulf Coast, supplies of gasoline and some other products have been growing increasingly tight, and some refiners have withdrawn quotations on some grades of gasoline for lack of material.

In the Western Pennsylvania district, some refineries have been closed down because of a shortage of crude oil, and all products are in strong demand, with the result that lows of price ranges have been raised. Neutral oils, gasoline, kerosine, and light fuel oils were affected in the advances of the lows of price ranges.

In the Middle West, prices generally are up to the ceilings, and with demand very strong for most products, marketers are trying, although without much success, to bring in supplies from the Southwest, to supplement the relative short quantities available in the district. Meanwhile, shipments from the Mid-West to the East Coast have been declining, with the latter area in an improved inventory position.

The markets in the Mid-Continent, as in the Middle West, are extremely strong for gasoline, kerosine, burning oils, and other products. Some Oklahoma refiners report that they are several weeks behind with shipments of gasoline, while they also are having difficulty in filling the demand for burning oils. Kerosine, too, is in strong demand. Bright stocks continue scarce, and neutral oils are being well absorbed, although demand has been easing somewhat.

Production Drops to 4,400,871 Barrels

Production of crude oil in the United States slumped during the week ended December 4 to a total of 4,400,871 barrels. This is a decrease of 27,219 barrels as compared to the total of 4,428,090 barrels of last week.

Largely responsible for the sharp decline was a decrease in Texas production of 20,900 barrels and in California of 10,300 barrels.

There were increases of from 1000 barrels to 3000 barrels in seven of the states, but these were not able to off-set the previously mentioned slumps.

Gasoline Association Meets In Dallas, April 13-15

The 1944 annual meeting of the Natural Gasoline Association of America will be held in Dallas, April 13, 14 and 15.

Directors selected the dates at a special session in Dallas December 1. Their session took place prior to a conference of executives of the industry and representatives of the Natural Gasoline Division of PAW, when plans for increasing the output of butanes and other light hydrocarbon products were considered.

PIPE LINE REVIEW

Start Movement by Rail From West Texas to East

Movement of West Texas crude oil by tank cars to Eastern refineries will hit a peak volume of 40,000 barrels daily as soon as the necessary 3500 cars are diverted to this service. The 76-car rack installed on the Texas & Pacific Railroad near Midland by Atlantic Pipe Line Company averages 17,000 barrels daily during the 12-day period ending December 1. All of this oil was consigned to Pittsburgh terminal of Keystone Pipe Line Company for movement to Philadelphia. A freight rate of 50 cents per 100 pounds and a turnabout period that will average about 17 days, are involved.

Deliveries to Pittsburgh are to be stepped up to 23,000 barrels daily, while initial shipments have been made to the Colonial-Beacon Oil Company's plant at Everett, Massachusetts, and the regular schedule calls for an average of 12,000 barrels daily. Cities Service Oil Company's East Braintree, Massachusetts, plant will be provided with an average of 5000 barrels daily by direct rail delivery as cars become available.

Stocks held in tank farms near Midland will be drawn upon for portion of this rail movement, which is expected to continue through February and possibly March, when Magnolia Pipe Line Company and Stanolind Pipe Line Company complete their new carriers. Magnolia is booked to supply 15,000 barrels daily, including about 50 percent from stocks on hand, for the rail pool, while Humble Pipe Line Company and Gulf Refining Company began delivering 10,000 barrels daily from stocks. Shell Pipe Line Corporation will contribute 5000 barrels daily through readjustment of a three-way exchange in operation between the company with Gulf Refining Company and The Texas Company.

Substantial production increases have been alloted West Texas effective December 1 to compensate for the extra transportation outlet. The group in Andrews and Ector Counties that were subjected to pipe-line proration prior to November 12 because of inadequate transportation will be permitted to produce 22 days instead of 18 during the current month. This increase will be absorbed by Humble Pipe Line Company in filling its 10,000-barrel quota to the tank-car pool.

Sun Proposes Pipe Line In Southwest Texas

Sun Pipe Line Company has made application to the PAW's transportation committee for approval of construction of a 144-mile pipe line system that would link Sun Oil Company's various properties in Southwest Texas with Corpus Christi.

Such a project was proposed by the company some years ago, and ground survey was made at that time. The company proposes to lay 84 miles of 8-inch from Harbor Island to the Seeligson area, with a 60-mile 6-inch extension to its holding in Starr County and intermediate points.

Sun Oil Company is currently producing 4610 barrels daily in the Rio Grande Valley district; 4625 barrels daily in the Mirando area and 2100 barrels near Beeville, while recent discoveries and new oil pays in established fields point to substantial production gains from its extensive holdings.

Start Welding Stanolind West Texas-Oklahoma Line

Welding operations are under way on Stanolind Pipe Line Company's 383-mile 16-inch trunk line from the Slaughter field to Drumright, Oklahoma, and ample pipe has been distributed at railheads for all six gangs organized by contractors to process with the work. The company has completed 2 of its scheduled seven 80,000-barrel steel tanks for the Slaughter terminal, and is filling same at rate of 3000 barrels daily. Stocks will be accumulated at a faster rate immediately, and the company is expanding its gathering system to serve the nearby Dean pool.

Phillips Plans Short Gasoline Pipe Line in North Texas

Phillips Petroleum Company has acquired right-of-way for extension of the natural gasoline pipe line from its K-M-A plant to a tank car rack at Mankins to connect with Shell Pipe Line Corporation's West Texas-Mid-Continent 10-inch oil trunk line, involving 6 miles of 3-inch line. The natural gasoline will be mixed with the Permian Basin sour crude under an exchange agreement whereby Shell Oil Company delivers natural gasoline from a West Texas plant to Phillips Petroleum Company's products line to Borger.

Lake Erie's Best Gas Well to Be Connected

Shot with about 300 pounds of dynamite, the Lake Erie well of West Petroleum more than doubled its original production, developing into the largest lake well yet drilled, with estimated open flow of between 750,000 and 1,000,000 cubic feet per day, from 1285 feet.

The pipe line to deliver gas from the well to the main transmission line of Union Gas Company has been connected.

It is estimated that sale of gas from the well will be about 350,000 cubic feet daily. The rock pressure has not yet been determined.

When the well is connected, the derrick and the whole pier will be taken down and stored until next spring. It is then the intention to drill at least three more wells.

Contract Let for Plastic Plant in South Texas

Gasoline Plant Construction Company of Houston has been awarded the contract to construct a $5,000,000 plant for Celanese Corporation of America on a 300-acre site at Bishop, Texas. Present plans are to make plastics from natural gas of which a large supply is available in the Corpus Christi area. The construction of this plant will be the first plastic manufacturer to establish facilities in the South using natural gas.

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Gravity-Scale Crude Oil Prices in Mid-Continent Fields

Posted in most instances between May 19 and May 21, 1941

GRAVITY	Oklahoma-Kansas	North Louisiana-Arkansas Mississippi					Inland Texas and New Mexico				South Texas		Texas Gulf Coast			Louisiana Gulf Coast						
		[1]Rodessa etc.	[2]Champagnolle etc. Tinsley Miss.	Bunkie, Eola, Olla, S. Olla, Little Crk. (by Standard)	Lisbon, La. (by Gulf)	[3]Atlanta, Buckner, etc. Ark.	North and West Central Texas	[4]Eastern Texas	Panhandle	West Texas, New Mexico	[5]Refugio Type	[6]Mirando Type	[7]Gulf Coast	[8]Anahuac Type	[9]Dickinson Type	[10]Gulf Coast	[11]Standard of La.	[12]Texas Co.	[13]Texas Co.	[14]Magnolia Pet. Co.	[15]Shell Oil Co.	Jennings (by Gulf)	[16]Rocky Mt. Area (Salt Creek, etc.
17–17.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	$0.94	....	....	....
18–18.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.96	....	....	....
19–19.9	....	....	....	....	....	....	....	$0.80	$0.80	$0.70	$1.08	$1.03	$1.06	$0.98	$0.93	$1.06	....	....	....	.98	$0.99	....	....
20–20.9	$0.85	....	....	....	....	$0.68	$0.85	.82	.82	.72	1.10	1.05	1.08	1.00	.95	1.08	$0.90	....	....	1.00	1.01	....	....
21–21.9	.87	....	....	....	....	.70	.87	.84	.84	.74	1.12	1.07	1.10	1.02	.97	1.10	.92	....	....	1.02	1.03	....	....
22–22.9	.89	....	....	....	....	.72	.89	.86	.86	.76	1.14	1.09	1.12	1.04	.99	1.12	.94	....	....	1.05	1.05	....	....
23–23.9	.91	....	....	....	....	.74	.91	.88	.88	.78	1.16	1.11	1.14	1.06	1.01	1.14	.96	....	....	1.08	1.07	....	....
24–24.9	.93	$0.88	$0.86	$1.03	....	.76	.93	.90	.90	.80	1.18	1.13	1.16	1.08	1.03	1.16	.98	....	....	1.11	1.09	....	....
25–25.9	.95	.90	.88	1.05	....	.78	.95	{.92 .97	.92	.82	1.20	1.15	1.18	1.10	1.05	1.18	1.00	....	....	1.14	1.11	....	....
26–26.9	.97	.92	.90	1.07	....	.80	.97	.99	.94	.84	1.22	1.17	1.20	1.12	1.07	1.20	1.02	....	....	1.17	1.13	....	....
27–27.9	.99	.94	.92	1.09	$0.81	.82	.99	1.01	.96	.86	1.24	1.19	1.22	1.14	1.09	1.22	1.04	....	....	1.19	1.15	....	....
28–28.9	1.01	.96	.94	1.11	.83	.84	1.01	1.03	.98	.88	1.26	1.21	1.24	1.16	1.11	1.24	1.06	$1.06	....	1.21	1.17	....	$0.96
29–29.9	1.03	.98	.96	1.13	.85	.86	1.03	1.05	1.00	.90	1.28	1.23	1.26	1.18	1.13	1.26	1.08	1.08	....	1.23	1.19	....	.98
30–30.9	1.05	1.00	.98	1.15	.87	.88	1.05	1.07	1.02	.92	1.30	1.25	1.28	1.20	1.15	1.28	1.10	1.10	$1.05	1.25	1.21	....	1.00
31–31.9	1.07	1.02	1.00	1.17	.89	.90	1.07	1.09	1.04	.94	1.32	1.27	1.30	1.22	1.17	1.30	1.12	1.12	1.07	1.27	1.23	$1.07	1.02
32–32.9	1.09	1.04	1.02	1.19	.91	.92	1.09	1.11	1.06	.96	1.34	1.29	1.32	1.24	1.19	1.32	1.14	1.14	1.09	1.29	1.25	1.09	1.04
33–33.9	1.11	1.06	1.04	1.21	.93	.94	1.11	1.13	1.08	.98	1.36	1.31	1.34	1.26	1.21	1.34	1.16	1.16	1.11	1.31	1.27	1.11	1.06
34–34.9	1.13	1.08	1.06	1.23	.95	.96	1.13	1.15	1.10	1.00	1.38	1.33	1.36	1.28	1.23	1.36	1.18	1.18	1.13	1.33	1.29	1.13	1.08
35–35.9	1.15	1.10	1.08	1.25	.97	.98	1.15	1.17	1.12	1.02	1.40	1.35	1.38	1.30	1.25	1.38	1.20	1.20	1.15	....	....	1.15	1.10
36–36.9	1.17	1.12	1.10	1.27	....	1.00	1.17	1.19	1.14	1.04	1.42	1.37	1.40	1.32	1.27	1.40	1.22	1.22	1.17	....	....	1.17	1.12
37–37.9	1.19	1.14	1.12	1.29	....	1.02	1.19	1.21	1.16	1.06	1.44	1.39	1.42	1.34	1.29	1.42	1.24	....	1.19	....	....	1.19	1.14
38–38.9	1.21	1.16	1.14	1.31	....	1.04	1.21	1.23	1.18	1.08	1.46	1.41	1.44	1.36	1.31	1.44	1.26	....	1.21	....	....	1.21	1.16
39–39.9	1.23	1.18	1.16	1.33	....	1.06	1.23	1.25	1.20	1.10	1.48	1.43	1.46	1.38	1.33	1.46	1.28	....	1.23	....	....	1.23	1.18
40 and Up	1.25	1.20	1.18	1.35	....	1.08	1.25	1.27	1.22	1.12	1.50	1.45	1.48	1.40	1.35	1.48	1.30	....	1.25	....	....	1.25	1.20

[1] Gulf schedule for Caddo, Homer, Haynesville, Bull Bayou, Crichton, De Soto, El Dorado and Rodessa, Texas. Standard of La. schedule for Cotton Valley, Rodessa, Shreveport (Cross Lake), and Caddo. Magnolia schedule for Haynesville, Cotton Valley, Rodessa, and Miller Co., Ark. Texas Co. schedule for "North Louisiana."

[2] Schedule of Standard of La. for Catahoula Lake, Elm Ridge, Hemphill, De Soto, Sabine, Fouke, Homer, Miller Co., Sugar Creek. Schedule of Root Petroleum Co. for Nick Springs, Urbana light, Schuler sweet, Rainbow, South Field (El Dorado), and Champagnolle.

[3] Schedule of Standard of La. for Atlanta, Buckner, Magnolia, Patton, Schuler: Jones sand, Village. Schedule of Root Petroleum Co. for Schuler: Reynolds lime, and Schuler: Jones sand.

[4] Humble schedule for Anderson, Cherokee, Limestone, and Navarro counties and Navarro Crossing field, except that prices from 80 to 92 cents represent postings only for Hawkins field, Wood County. For Talco crude, Magnolia's prices are same as Humble's for Hawkins. Rodessa, Texas, prices are same as in Rodessa, La.-Ark.

[5] Schedule for Refugio, E. White Point, Greta, Melon Creek, Midway, Minnie Bock, O'Connor-McFaddin, Plymouth, Saxet, Taft, and Tom O'Connor.

[6] Schedule for Blanchard, Bridwell, Colorado, Comitas, Eagle Hill, Escobas, Fitzsimmons, Glen, Government Wells (N. and S.), Heyser, Hoffman, Kelsey, Kohler, Loma Novia, Lundell, Manila, Mirando Valley, Placedo, Randado, Sarnosa, and Tesoro.

[7] Humble schedule for Amelia, Clear Lake, Goose Creek, Hastings, Magnet, Mykawa, Mykawa new, Raccoon Bend, South Thompsons, Sugarland, Thompsons, Webster. Texas Co. schedule for Ariola, Ganado, Hamman, Hillje, Humble, Kubela, Magnet, Manvel, Markham, Mauritz, Old Ocean, Pickett Ridge, Port Neches, Sour Lake, West Columbia, Withers; except that schedule provides $1.36 top, 34 gravity. Pan American Prod. Co. schedule for Hastings and South Houston. Gulf schedule for Spindle Top, Sour Lake, Lovells Lake, West Beaumont, Goose Creek, South Liberty, Big Creek, Blue Ridge, Fannett, Moore, Barbers Hill, Hankamer, Thompsons, Lochridge, Dyersdale, and Hull (old) crudes. Sun schedule for Barbers Hill, Batson old, Cotton Lake, Esperson below 35 gravity, Goose Creek, Greens Lake, Hull below 25, Humble below 35, Nome, North Dayton below 25, Orange, Saratoga, Sour Lake, South Liberty.

[8] Humble schedule for Anahuac, Angleton, Cedar Point, Fishers' Reef, Hull old and new, Pierce Junction, Red Fish Reef, Turtle Bay fields. Sun schedule for Anahuac, Caplen, and Turtle Bay. Gulf schedule for Anahuac, Hull new, Pierce Junction, Orange and Thompsons deep.

[9] Humble schedule for Dickinson, Gillock, Hardin, League City, and Rowan fields. Pan American Prod. Co. schedule for Gillock crude.

[10] Sun Oil Co. schedule for Bayou Blue, Chacahoula, Fausse Pointe, Hackberry (E. and W.), and Vinton. Texas Co. schedule for Bay St. Elaine, Caillou Island, Iberia, Lake Barre, Lake Pelto, Leesville and Port Barre for crude ranging in gravity up to 27-27.9; for lighter oils in those fields see Footnote 12. Gulf schedule for Edgerly, Starks, Vinton, E. Hackberry, Cameron Meadows, Leesville. Deduct 10 cents for Gulf's prices for Timballer Bay, Grand Bay, Quarantine Bay, and West Bay. Deduct 2 cents for Standard of La. prices for University (Baton Rouge) crude of 30 to 35.9 gravity.

[11] Standard of La. schedule for Bayou Mallet, Bayou Sale, Choctaw, Darrow, Jeanerette, Lirette, N. Crowley, S. Crowley, Fort Barre, Potash, Roanoke, St. Martinville. Deduct 10 cents for Anse La Butte.

[12] Texas Co. schedule for Bateman Lake, Dog Lake, Fausse Point, Horseshoe Bayou, Jefferson Island, Plumb Bob, Vermilion Bay, West Cote Blanche, and Delta Duck Club. Add 8 cents to these prices for Texas Co. postings for 28 or higher gravity at Bay St. Elaine, Caillou Island, Iberia, Lake Pelto, Leesville, Port Barre, and Lake Barre.

[13] Texas Co. schedule for Delta Farms, Golden Meadows, Lake Salvador. Also Standard of La. for Golden Meadows.

[14] Magnolia schedule for Lockport, Cameron Meadows, West Gueydan.

[15] Shell Oil Co. schedule at Iowa, Black Bayou, White Castle. For Shell's prices at Roanoke and Chalkley fields deduct 5 cents. For Shell's prices at Gibson, South Houma, Hester, and West Lake Verret fields deduct 10 cents.

[16] Sinclair-Wyoming Oil Co. prices at Salt Creek, Lost Soldier, Iron Creek, effective May 20, 1941. Deduct 10 cents for East Mahoney and deduct 20 cents for Mahoney and Werta.

MID-CONTINENT FLAT PRICES

FIELD—	Flat Price	Date Posted
Arkansas:		
Big Crk., Columbia, McKamie, Macedonia, Dorcheat, sour dist.	$1.25	2– 3-43
Dorcheat, Macedonia dist'l.	1.30	11–16-42
Smackover, Heavy	.83	5–22-41
Texarkana sweet distillate	1.40	–42
Louisiana, North:		
Cotton Valley Distillate	1.40	9– 1-41
Cotton Valley (Holloway sn.)	1.25	5–22-41
Lisbon Distillate	1.20	5–22-41
Urania	1.15	5–22-42
Louisiana, South:		
Erath	1.21	5–21-41
Garden Island	1.36	5–21-41
Happytown	1.15	5–20-41
Lafitte, Paradis	1.19	5–21-41
Lake Arthur & Tepetate	1.18	5–21-41
Lake Mongoulois	1.36	5–21-41
Ville Platte	1.30	5–22-43
Nebraska:		
Falls City, in field	.90	8– 1-41
Falls City, in tank cars	.95	8– 1-41
Shubert, in tank cars	.97	8– 1-41
Texas:		
Alice, Benavides (No. Sweden), Ben Bolt, Clark-Muil, Sun and Tom Graham	1.35	5–21-41
Cayuga	.90	5–21-41
Chapel Hill 50° and up	1.25	3–19-42
Chapel Hill below 50°	1.18	1–20-42
Clay Creek	1.00	5–22-41
Cleveland	1.26	5–21-41
Conroe	1.43	5–21-41
Esperson 35° & up; S. Esperson (Sun Oil)	1.30	5–22-41
East Texas, Flag Lake	1.25	5–20-41
Flour Bluff, East Flour Bluff, and La Rosa	1.33	5–21-41
Hockley-Cochran Counties	.87	5–21-41
Livingston, Cleveland	1.25	5–20-41
Long Lake	1.23	5–21-41
Luling	1.05	5–21-41
Lytton Springs	1.17	5–21-41
North Rincon	1.45	2– 3-43
Salt Flat, North Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.14	5–21-41
Satsuma, Tomball	1.40	5–21-41
Sun Oil Co. at Batson (new), Fig Ridge, Hardin, Hull 25 and up, Humble 35 and up, LaBelle, N. Dayton 25 and up, Oyster Bayou, Seabreeze, S. China, W. Orange and Willow Slough	1.25	5–22-41
South Cotton Lake	1.35	5–22-41
Sun, N. Sun, N. Rincon, Garcia	1.35	5–22-41
Van	1.08	5–21-41
Yates (Deep)	.95	5–20-41
Yates (Shallow)	.82	5–20-41
Yturria (Sun in S. Texas)	.....	.....

MICHIGAN PRICES

Central (Basin):		
Porter, Greendale, Crystal, Wise, Midland, Vernon, Saginaw	$1.44	5–27-41
Buckeye, Edenville, Bentley, Beaverton, Monitor, Kawkawlin	1.42	5–27-41
Freeman, Lincoln, Sherman Redding, Temple, Winterfield, Trenton-Monroe Co., Fork Tws.-Mecosta Co.	1.39	5–27-41
Hamilton-Grout	1.29	5–27-41
Adams	1.27	6– 1-41
Arenac, Clayton, Ogemaw, W. Branch	1.24	5–27-41
Southwest (Shallow):		
Traverse, crude in Allegan, Kent, Ottawa, Van Buren Counties	1.45	6– 2-41
Clare	1.11	5–27-41

MIDDLE WEST PRICES

FIELD—	Flat Price	Date Posted
Lima, Ohio-Ind.	$1.50†	10–28-42
Illinois Basin (Sohio Corp.)	1.37	5–19-41
Lake Centralia-Salem, Illinois	1.37	5–19-41
Eastern Ill.-Western Ind.	1.22	5–21-41
Plymouth, Illinois	1.05	4–28-43
Western Kentucky	1.37	8– 9-43
Birk City, Western Kentucky	1.37	8– 9-43
Kentucky River, Eastern Ky.	1.43	6–19-41
Big Sandy River, Eastern Ky.	1.43	8– 9-43
Cleveland, Lodi, Chatham, Ohio	1.30	9– 1-41

ROCKY MOUNTAIN STATES PRICES

Colorado:		
Canon City and Florence	$1.05	5–21-41
Iles	1.07	5–20-41
Montana:		
Cat Creek	1.15	4– 1-41
Cut Bank (6 Buyers)*	1.05-1.20	3–30-42
Dry Creek	1.02	5–20-41
Sunburst	1.00	5–20-41
New Mexico:		
Artesia	.94	5–21-41
Hogback	1.00	10–11-38
Wyoming:		
Big Muddy	1.08	5–30-41
Byron	.70	3– 4-43
Elk Basin	1.00	5–21-41
Elk Basin, Black	.90	4–28-43
Frannie, Light	.85	2–26-43
Frannie, Heavy	.62	2–26-43
Garland	.60	3– 4-43
Grass Creek, Light	1.00	5– 1-41
Grass Creek, Heavy	.65	4– 1-43
Hamilton Dome	.60	2–26-43
Lance Creek (Ohio Oil Co.)	1.12	7– 1-41
Mill Creek	.72	10–11-38
Oregon Basin	.65	3– 4-43
Osage	1.30	10–11-38
Poison Spider	.65	2–26-43
Rock River	1.15	5–21-41
Salt Creek, Tensleep Heavy	0.8285	2–27-43

*About 25% of Cut Bank crude brings $1.20 per barrel; 65% less than $1.20 and minimum $1.10; and 10% less than $1.10.

†$1.50-price applies to about ¾ of field's production; $1.60 to ¼ of it.

Wholesale Prices of Refined Products in Principal Markets

REFINED GASOLINE (Cents a gal.)	Current Range		Changes from Month Ago	
Oklahoma Refineries:				
60 Oct. & Under.	5¼	5¼	...	...
63-66 Octane	5⅝	5⅝	...	...
72 Octane	6	6	...	...
76 Octane, Ethyl.	6¾	6¾	...	...
Mid-Western Tank Car:				
60 Oct. & Under..	5¼	5¼	...	...
63-66 Octane	5⅝	5⅝	...	...
72 Octane	6	6	...	...
76 Octane, Ethyl.	6¾	7⅛	...	...
New York Harbor:				
68-70 Octane	9¼	9¼	...	...
72 Octane	9¼	9⅞	...	...
Gulf Coast, Cargoes:				
60 Oct. unleaded.	5	5	...	...
65 Oct. unleaded.	5¼	5¼	...	...
68 Oct. unleaded.	5½	5⅝	...	...
70 Oct. unleaded.	5⅝	5¾	...	...
63-65 Oct. leaded	...	...	...	...
72 Oct. leaded...	5¾	5¾	...	...
Min. 76 Oct. l'ded	6¼	6¾	...	...
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3..	4¾	4¾	...	...
F.O.B. Brk'g, Tex	3¾	3¾	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	4⅝	4⅝	...	...
42-44 water white	4½	4½	...	...
Mid-Western Tank Car:				
41-43 water white	4⅝	4⅝	...	...
42-44 water white	4½	4½	...	...
New York Harbor	7⅛	7⅛	...	...
†Gulf Coast:				
41-43 water white	4⅛	4¼	...	+⅛
42-44 water white	4⅛	4⅛	...	...
RANGE OIL				
At Okla. Refs.... 4		4⅛	...	...
In Mid-Western Mkt. Group 3, basis.. 4		4⅛	...	...
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 prime white	3⅞	3⅞	...	...
No. 1 straw	...	...	...	...
No. 2 straw	3⅝	3⅝	...	...
No. 3	3½	3½	...	...
Mid-Western Tank Car:				
No. 1 prime white	3⅞	3⅞	...	...
No. 2 straw	3⅝	3⅝	...	...
No. 3	3½	3½	...	...
New York Harbor:				
No. 1	7⅛	7⅛	...	...
No. 2	6¾	6¾	...	...
No. 3	6¾	6¾	...	...
Gulf Coast Cargoes:				
No. 2	3¾	3¾	...	...
DIESEL & GAS OILS (Cents per gallon, cargoes, according to Diesel index number)				
Gulf Coast:				
43-47 diesel index	4	4	4	4
48-52 diesel index	4	4	...	...
53-57 diesel index	4⅛	4⅛	...	...
58 and above....	4¼	4¼	...	...

HEAVY FUELS (Per Bbl.)	Current Range		Changes from Month Ago	
Oklahoma Refineries:				
No. 6	...	...	...	...
14-16 Gravity	$0.97	$0.97	...	...
Mid-Western Tank Car:				
No. 5	.85	.85	...	...
No. 6	.80	.80	...	...
New York Harbor:				
No. 5	1.95	2.01	...	...
No. 6	1.65	2.07	...	...
BUNKER C FUEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$0.85	$1.27	...	...
New York Harbor...	1.65	2.07	...	...
DIESEL OIL, HEAVY (Per barrel, ships' bunkers)				
Gulf Coast, below 28 grav.	$1.35	$1.35	...	...
Gulf Coast 28 grav...	1.65	1.65	...	...
New York Harbor...	2.78	2.78	...	...
LUBRICATING OIL (Cents a gallon)				
Oklahoma Refineries:				
Bright stock (viscosity at 210°):				
200 vis. D, 10-25 pour point	.27	27	...	...
150-160 vis. D:				
0-10 pour point	.23	23	...	...
10-25 pour point	.22½	23	...	...
25-40 pour point	.23	23	...	...
150-160 vis. E	.22	22	...	...
120 vis. D, 0-10 pour point	.22	22	...	...
Cylinder Stocks:				
600 s.r. dark green	8½	8½	...	...
600 s.r. olive green	10	11	...	...
631 s.r.	...	...	...	...
Neutral Oils (viscosity at 100°, 0-10 pour point):				
Pale Oils:				
60- 85 vis. No. 2 color	8	8	...	...
86-110 vis. No. 2 color	8½	8½	...	...
150 vis. No. 3 color	14½	14½	...	...
180 vis. No. 3 color	15	15	...	...
200 vis. No. 3 color	15	15	...	...
250 vis. No. 3 color	16	16½	...	...
280 vis. No. 3 color	17	17	...	...
300 vis. No. 3 color	18	18	...	...
Red Oils:				
180 vis. No. 5 color	15	15	...	...
200 vis. No. 5 color	15	15	...	...
280 vis. No. 5 color	..	..	...	...
300 vis. No. 5 color	17½	17½	...	...

LUBRICATING OIL (Cents a gal.)	Current Range		Changes from Month Ago	
Western Pennsylvania: Cylinder Stocks:				
600 s.r. filtrable	15	15	...	...
650 s.r.	15½	15½	...	...
600 flash	16	16	...	...
630 flash	17	17	...	...
Bright Stock (No. 8 Color, 145-155 vis. at 210°, 540-550 fl.):				
10 pour test	30½	30½	...	...
15 pour test	29½	29½	...	...
25 pour test	25	25	...	...
Viscous Neutrals (No. 3 Color, vis. at 70°):				
200 vis. (180 at 100), 420-425 fl.:				
Zero pour test	33	33	...	...
10 pour test	32	32	...	...
15 pour test	31	31	...	...
25 pour test	27	31½	...	+3½
150 vis. (143 at 100), 400-405 fl.:				
Zero pour test	31	31	...	...
10 pour test	30	30	...	...
15 pour test	29	29	...	...
25 pour test	25	28½	...	+2½

EASTERN STATES CRUDE OIL PRICES

FIELD—	Flat Price	Date Posted
Bradford-Allegany	$3.00	3-26-42
Sw. Pa. Pipe Line	2.65	3-26-42
Eureka Pipe Line, W. Va.	2.59	3-26-42
Corning Grade, Ohio	1.31	5-27-41
Buckeye Crude, Ohio	2.30	6-18-41

MAJOR CRUDE OIL PRICE CHANGES

	Penna. Grade	Mid-Cont. (36 Gr.)	Calif. (26 Gr.)
May 22, 1940	Cut 25	.....	.....
June 18, 1940	Cut 25	.....	.....
July 12, 1940	Cut 25	.....	.....
Aug. 28, 1940	Cut 15	.....	.....
Nov. 12, 1940	Up 15	.....	.....
Dec. 17, 1940	Up 15	.....	.....
Jan. 27, 1941	Up 15	.....	.....
April 1, 1941	.....	Up 5	.....
April 23, 1941	Up 10	.....	.....
May 19, 1941	.....	Up 10	.....
May 21, 1941	Up 15	.....	.....
June 18, 1941	Up 20	.....	.....
Aug. 14, 1941	Up 23	.....	.....
Aug. 25, 1941	Cut 23	.....	.....
March 26, 1942	Up 25	.....	.....
April 1, 1943	.....	.....	Up ‡25

‡ 14 and 15 gravity.

CRUDE OIL PRICES IN CALIFORNIA

Prices per barrel in field, posted by Standard Oil Company of California, effective May 25, 1943. All gravities above those quoted take highest price offered in that field.

GRAVITY	Signal Hill (Long Beach)	Wilmington	El Segundo	Seal Beach	Huntington Beach	Inglewood	Olinda, Brea Canon	Athens-Rosecrans	Torrance	Richfield	Whittier, East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Newhall, Kern River Kern Front, McKittrick Round Mountain	Greeley, Canal, Wasco	Coles Levee	Mountain View	Elk Hills, Buena Vista Hills, Midway-Sunset, Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge	Kettleman Hills	Elwood Terrace
12–12.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	$0.94	....	....	....	$0.94	$0.94	$0.94	....	....	....
13–13.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.96	....	....	....	.96	.96	.96	....	....	....
14–14.9	....	$0.93	....	....	$0.96	....	$0.95	....	$0.95	$0.95	$0.95	$0.97	....	....	.98	....	....	....	.98	.98	.98	....	....	....
15–15.9	....	.96	....	....	1.00	$1.01	.97	....	.97	.96	.97	.97	....	....	*Playa	....	....	....	.98	.98	.98	....	....	....
16–16.9	....	.96	$1.01	....	1.00	1.01	.97	....	.97	.96	.97	.97	....	....	del	....	....	....	.98	.98	.98	....	....	....
17–17.9	....	.96	1.01	....	1.00	1.01	.97	....	.97	.96	.97	.97	....	....	Rey	....	....	....	.98	.98	.98	....	....	....
18–18.9	$0.93	.96	1.01	....	1.00	1.01	.97	....	.97	.96	.97	.97	....	....	.88	....	....	....	.98	.98	.98	....	....	....
19–19.9	.93	.96	1.01	....	1.00	1.01	.97	....	.97	.96	.97	.97	....	....	.88	....	....	$0.98	.98	.98	.98	....	....	....
20–20.9	.93	.96	1.01	....	1.00	1.01	.97	....	.97	.96	.97	.97	....	....	.88	....	....	.98	.98	.98	.98	....	....	....
21–21.9	.93	.96	1.01	....	1.00	1.01	.97	....	.97	.96	.97	.97	....	....	.88	....	....	.98	.98	.98	.98	....	....	....
22–22.9	.96	.98	1.02	$0.88	1.00	1.01	.97	....	.97	.96	.97	.97	....	....	.88	....	....	.98	.98	.98	.98	$0.95	....	....
23–23.9	1.00	1.02	1.05	.92	1.02	1.01	.98	....	.97	.98	1.00	.97	....	....	.91	....	....	.98	.99	.98	.98	.95	....	....
24–24.9	1.03	1.06	1.07	.97	1.05	1.04	1.01	....	1.01	1.02	1.03	.97	$0.99	....	.95	....	....	.98	1.03	.99	.98	.95	....	....
25–25.9	1.07	1.09	1.10	1.01	1.08	1.07	1.04	....	1.05	1.06	1.07	.98	1.02	....	.99	....	....	.98	1.07	1.01	.98	....	....	....
26–26.9	1.11	1.12	1.12	1.06	1.11	1.10	1.08	....	1.09	1.10	1.11	1.01	1.06	....	1.03	....	....	.98	1.11	1.04	.98	....	....	....
27–27.9	1.15	1.15	1.15	1.10	1.14	1.14	1.11	....	1.13	....	1.15	1.05	1.10	$1.04	....	....	....	1.01	1.15	1.07	.98	....	....	....
28–28.9	1.18	1.18	1.17	1.15	1.17	1.17	1.14	....	1.17	....	....	1.08	1.13	1.08	....	....	....	1.04	1.19	1.10	1.00	....	....	....
29–29.9	1.20	1.21	....	1.19	1.20	1.20	....	$1.17	....	....	....	1.12	1.17	1.12	....	....	....	1.07	1.24	1.13	1.02	....	....	....
30–30.9	1.23	1.24	....	....	1.23	1.22	....	1.21	....	....	....	1.15	1.21	1.15	....	$1.01	$1.09	1.10	1.28	1.16	1.04	....	....	FOB
31–31.9	....	....	....	....	....	1.24	....	1.25	....	....	....	1.19	1.24	1.19	....	1.04	1.12	1.14	....	....	1.06	....	....	Ship
32–32.9	....	....	....	....	....	....	....	1.29	....	....	....	1.23	1.28	1.23	....	1.07	1.14	1.17	....	....	1.09	....	....	....
33–33.9	....	....	....	....	....	....	....	1.32	....	....	....	1.27	....	1.26	....	1.10	1.17	....	....	....	1.11	....	....	$1.22
34–34.9	....	....	....	....	....	....	....	1.36	....	....	....	1.31	....	1.30	....	1.13	1.20	....	....	....	1.13	....	....	1.25
35–35.9	....	....	....	....	....	....	....	....	....	....	....	1.35	....	....	....	1.16	1.22	....	....	....	....	....	$1.23	1.28
36–36.9	....	....	....	....	....	....	....	....	....	....	....	1.39	....	....	....	1.19	1.25	....	....	....	....	....	1.26	....
37–37.9	....	....	....	....	....	....	....	....	....	....	....	1.43	....	....	....	1.22	....	....	....	....	....	....	1.29	....
38–38.9	....	....	....	....	....	....	....	....	....	....	....	1.47	....	....	....	1.25	....	....	....	....	....	....	....	....
39–39.9	....	....	....	....	....	....	....	....	....	....	....	1.51	....	....	....	....	....	....	....	....	....	....	....	....
40–40.9	....	....	....	....	....	....	....	....	....	....	....	1.53	....	....	....	....	....	....	....	....	....	....	....	....

* Effective April 1, 1943, posted by Union Oil Company of California.

Tanker-Borne California Gasoline Moves To Alaska Highway Ahead of Norman Oil

Although the 500-mile, 4-inch pipe line from the Fort Norman oil field, Northwest Territories, Canada, to Whitehorse, on the Alaska highway, Yukon, is not due to be completed until January, with the 3000-barrel refinery at Whitehorse to be finished in May, there is in operation already an auxiliary pipe line system that delivers California gasoline to Whitehorse.

This information was disclosed in correspondence between the United States and Canadian governments, recently released by Canada's Premier Mackenzie King at Ottawa.

The auxiliary system is a 110-mile, 4-inch pipe line from Skagway, Alaska, to Whitehorse. The Skagway-Whitehorse line, from 10 to 15 miles of which runs through United States territory, is carrying gasoline that has been brought up the coast by tankers from California to Prince Rupert and thence by barge to Skagway.

While the pipe line and refinery for handling Fort Norman crude will have a capacity of only 3000 barrels per day, the field has a potential producing capacity much higher.

There are now 27 producing wells in the field. Under contract with the United States government, Imperial Oil completed 26 wells, of which 23 found oil, while 4 productive wells were drilled formerly. By July 1, 1943, it was disclosed, enough new wells had been drilled to produce 3000 barrels daily, "and potential production has considerably expanded since then." Four wells have been drilled a considerable distance from the productive area.

Cost of the entire Canol project, unofficially estimated to have amounted so far to $134,000,000, is being borne by the United States government, with United States engineers and private contractors performing the work.

The Canadian government's contribution to the project, according to the information released from Ottawa, consists of waiving duties and taxes, acquiring of rights-of-way and providing roads paralleling the pipe lines. Under the agreements, the Dominion government waives import duties, sales taxes, territorial taxes, license fees or other similar charges on all equipment and on personal effects of construction workers.

"War" royalties on oil production and income tax on persons and corporations resident in the United States employed also are remitted.

The two pipe lines of the Whitehorse refinery are to be the property of the United States government; but at the end of the war, they will be valued on the basis of their then "commercial value." The Canadian government, it is stipulated, will have the first option to purchase. If the option is not exercised, the pipe lines and refinery may be offered for sale by public tender. One representative from each of the two countries will act as valuers; and if they disagree, an umpire it to be appointed.

Under no conditions are the pipe lines or refinery to be dismantled except with the approval of the permanent joint defense board. Officials in Ottawa disclosed that at the time the project was agreed upon, it was generally considered the pipe lines and refinery may have no commercial value after the war, when Canadian taxes and duties will become collectible.

Construction on the projects started in 1942, with the Canadian government giving its approval without delay. The correspondence discloses that the United States authorities approached the Dominion government on June 22, 1942, on the proposal and Canada agreed 7 days later. The proposal for the Skagway-White Horse pipe line was proposed by the United States on June 26, 1942, with Canada approving the following day.

While the above information on the Canol project originated in Ottawa, other angles of the proposition were brought out in considerable detail in the Congressional investigations at Washington. (THE OIL WEEKLY, November 29, page 33.)

Larger Persian Facilities Help Supply Oil to Allies

Victory in the Mediterranean and increased production of ships have made it possible for the British Ministry of War transport and the American War Shipping Administration to reallocate tanker tonnage so as to make greater use of oil resources in the Middle East and to reduce the drain on American oil supplies, according to a statement by the British Information Services, which emphasized the present increased utilization of Persian oils.

"Thanks to British foresight," the bulletin said, the Middle Eastern resources "have been preserved intact for use by the United Kingdom.

The Italian bombardment of Bahrein in 1941 is an indication of what might have happened to Abadan had the British not driven the Germans out of their footholds in Syria and Iraq, and if the British and Russians had not combined to drive the many hundreds of German specialists out of Iran.

Since then the machinery for using Persian oil resources has been improved and extended. The refinery at Abadan has been enlarged. A new pipe line has been built. Oil specialists who had to leave Burma when it was conquered by the Japanese have put their knowledge and experience to the service of Anglo-Persian Oil Company at Abadan.

The main British source of oil in the Middle East is Anglo-Persian Oil Company's fields at Masjid-i-Suleiman. Oil is piped from there to the refinery at Abadan, an island at the head of the Persian Gulf.

As long as the Mediterranean remained open, according to the British statement, shipment of oil from Abadan to Britain was still practicable although subject to the submarine hazards which beset all Allied merchant shipping. When the Mediterranean was closed to merchant shipping, however, and the route around South Africa adopted, the distance from Abadan to Britain was increased to 11,000 miles. Meanwhile, oil was available at United States Gulf and Caribbean points, only 4,600 miles from Britain. And "common sense dictated," the bulletin said, "that the limited supply of tanker tonnage available should be used to the best of advantage, i.e. that it should be used to transport oil to Britain from the Gulf of Mexico rather than from the head of the Persian Gulf.

But now Allied merchant ships can sail through the Mediterranean in comparative safety, and there are more of them to sail.

Much Activity Ahead in Venezuela and Colombia

Extraordinary expansion of petroleum development in the early future is in store for Colombia as well as Venezuela, it is indicated by predictions made public by R. W. Gallagher, president of Standard Oil Company (New Jersey), recently, on return from Venezuela.

Development of rich new oil fields in Colombia, particularly along the Magdalena River, was forecast, and Gallagher indicated he plans to make a trip to that country, to inspect established fields and study potential new facilities.

Venezuela and Colombia were described as holding promise of furnishing the most important contribution to expansion of the world's oil-production capacity.

Production in Venezuela alone soon will reach 1,000,000 barrels a day, Gallagher predicted.

New pipe lines will be built as materials are made available, he said, and new refineries will be constructed, while new oil fields will be developed and present fields will be steadily expanded.

Taber Best Canadian Field Outside Turner Valley

Largest producing field in Alberta outside Turner Valley, Taber field yielded 64,086 barrels of oil, an average of 232 barrels daily, during the first 9 months of 1943.

Vermilion field, with many more wells, produced 47,425 barrels, or 174 barrels daily, during the same period.

Total "outside Turner Valley" production from January to the end of September, 1943, was 141,989 barrels.

Red Coulee yielded 6611 barrels and Wainwright 13,575 barrels.

12,056-Foot Wildcat Is Deepest Canadian Test

Shell-Norman No. 1, deepest test in Canada, has stopped drilling at 12,056 feet, 468 feet in Madison limestone. Bottom is in the black lime, under the Lower Porous. The well is on the Jumping Pound structure, 20 miles west of Calgary.

Officials will decide on the next step following results of a directional survey, but say production outlook is not bright.

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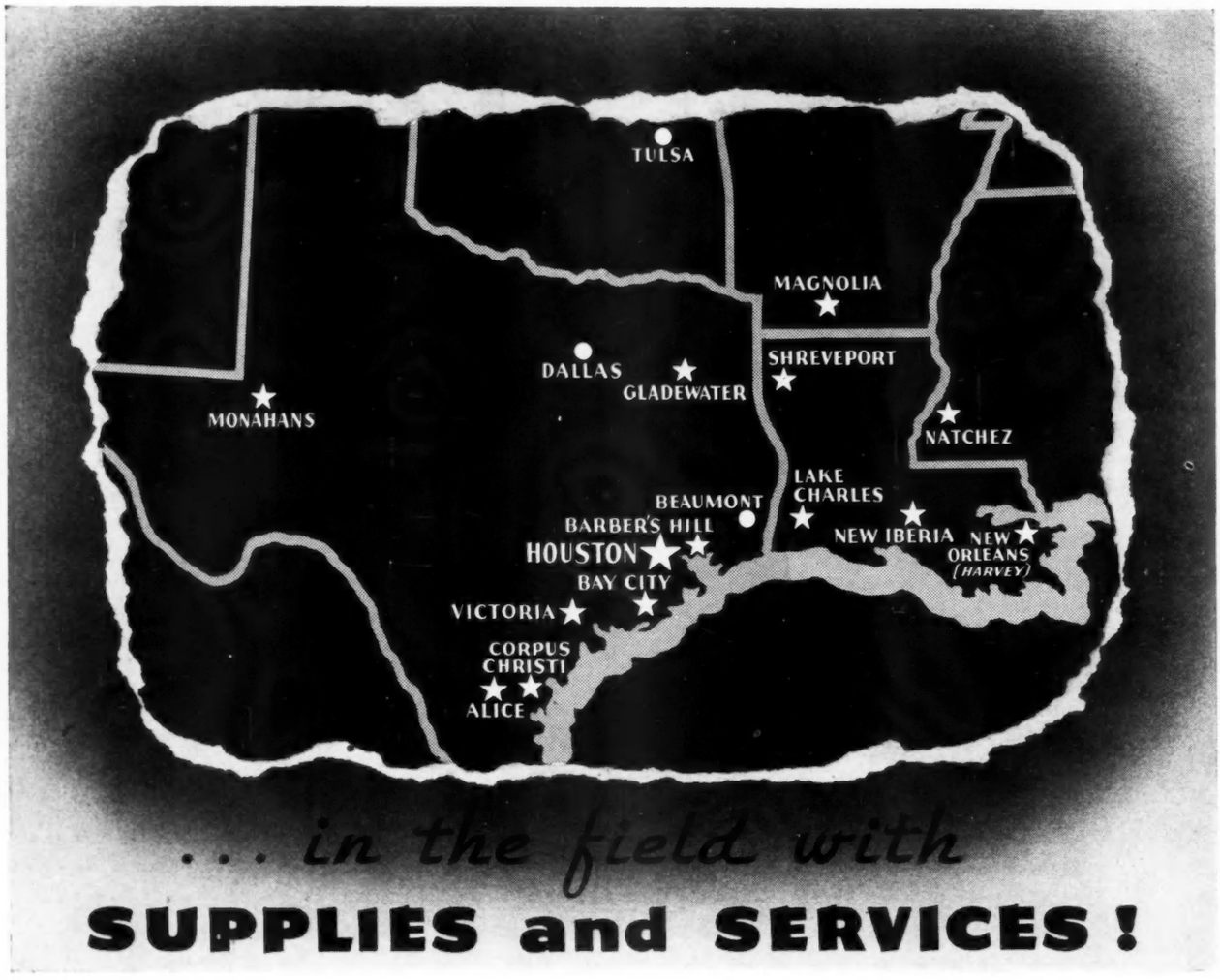

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U. S. Field Operations

Illinois

Wayne County Discovery Testing Second Sand

Wayne County had a definite pool opener this week at Robinson & Puckett's Gordon-Muhlbach 1, in 1-1n-8e, two miles from production in the Clay City pool, which swabbed 162 barrels of oil in 18 hours from McClosky lime at 3080-3128 feet after 4000 gallons of acid. Plans are to test Rosiclare through perforations, that formation having shown possible production in an electric log test.

Jefferson County: J. W. Murchison is testing Sledge 1, SE SE SE 34-3s-2e, discovery well two miles north of Nason. The well pumped 26 barrels of oil in 8 hours from Rosiclare lime at 2783-96 feet. Rods and tubing are being pulled in order that the well may be cleaned out again.

Franklin County: J. W. Murchison's Franklin County Coal Company 1, NE SW SW 11-5s-2e, a discovery northeast of Whittington, is still pump testing McClosky lime after 2500 gallons of acid. In the most recent gauge, the well made 17 barrels of oil in 24 hours.

Richland County: Pure Oil Company is completing Shatto 1, C NW SW 33-3n-9e, the northernmost well in the north Schnell pool, for a McClosky producer. The well flowed 480 barrels of oil natural in 18 hours.

Wayne County: Two prospective pool openers were testing in Wayne County this week and in widely separated areas. The first is Felix Jablonski's Orndorff 1, NW NW 3-1n-9e, which made 35 feet of oil and 55 feet of oil-cut mud in 1 hour and 20 minutes during a drill-stem test of Aux Vases sand at 3104-19 feet. Casing is set to 3102 feet. The other well is Comanche Oil Company's Felix Heirs 1, SE SE 2-2s-6e, which is testing McClosky lime after a drill-stem test at 3329-39 feet yielded 120 feet of oil and 30 feet of oil-cut mud.

Hamilton County: Bur-Kan Petroleum Company's Tyler 1, C N½ SE NE 33-5s-7e, in an area which is essentially a Pure Oil Company block, is scheduled to get underway. Favorably regarded as a result of seismograph tests, the area is 2½ miles from Aux Vases and Tar Springs sand production in the Dale pool and 6 miles south of production in the Bungay area. Contributing money to the venture are Pure Oil Company, Ohio Oil Company, Skelly Oil Company and Tide Water Associated Oil Company. Acreage holders in addition to the contributors are Carter Oil Company, Gulf Refining Company, The Texas Company and Sinclair Wyoming Oil Company.

Two other wildcats in the county which are holding interest are Biggs & Johnson's Barr 1, NE NE NE 26-4s-5e, which is moving in rotary, and Alexandria Fruit Company's Wright 1, W½ NE SW 34-5s-5e, which is drilling below 736 feet.

Coles County: K. W. Kilpatrick's Morris 1, NE SE NE 27-11n-7e, south of Mattoon, was shut down for repairs at 1130 feet. The operator was finding the drilling much easier than at two other wildcats drilled in the same general area during the past two months. The well is in a favorably regarded area.

Fayette County: The Texas Company is spudding Stokes 1, SW NW NW 7-8n-1e, a wildcat north of Vandalia.

Indiana

Posey County Discovery Swabs 15 Barrels Hour

Bennett Brothers' Spencer 1, NE SE SW 32-6s-14w, Posey County, 6 miles north of Mt. Vernon and 3½ miles west of the Mt. Vernon pool, appears to be the best discovery in Indiana in many weeks. Testing Tar Springs sand saturation at 2142-49 feet, the well swabbed 15 barrels of oil per hour through casing. Total depth of the hole is 2150 feet.

Operations in the state showed a slight increase this week, moving up from 71 to 73, of which 36 were drilling, 20 were locations, 5 were rigging tools and 12 were inactive. First reports totaled 6 as compared with 5 last week. First reports included 2 wildcats.

Thirty-one wildcat wells were in various stages. Thirteen were drilling, 10 were locations, 3 were rigging tools, and 5 were inactive.

No producing wells were completed, but the state had 4 dry holes.

Pennsylvania

Horizontal Wells Make 33 Barrels of Oil Daily

Leo T. Ranney, designer of the new horizontal-shafted oil well, announced that the two horizontal shafts of his well at Two-Mile Run near Franklin, Pennsylvania, are producing 33 barrels of oil daily, with a predicted steady production of 20 barrels daily per horizontal well, as against previous production of 1/10 of a barrel per day by vertical oil wells in the district. The first horizontal well blew in November 25 after 1200 pounds of 80 percent high velocity gelatin and TNT were packed into the two 2350-foot horizontal wells to within 400 feet of the underground work chamber. This was said to be the longest line of shot ever used. Ranney estimated that the blast created pressure of more than a million pounds per square inch. He hopes to drain from the Venango first sand, through which the horizontal shafts extend, oil that would have to be obtained by 200 vertical wells.

Work will begin immediately on other wells, which will total 24, to be mined horizontally from the 429-foot vertical shaft. This shaft is 8 feet in diameter and drops down to the work chamber, a concrete room 27 feet in diameter and 55 feet high.

JOHN R. CRAIN, formerly with British American Oil Producing Company, Tulsa, is now in charge of geological work for Ashland Oil & Refining Company, Tulsa.

Oklahoma

Granite Wash Pool In Washita County

Granite wash is furnishing a field in Southwestern Oklahoma where Gulf Oil Corporation's deep test, Hopkins 1, C NW SE 8-8n-20w, Washita County, plugged back to test earlier shows in broken granite. On late test the well made a flow of 460 barrels of fluid in 10 hours, with the exact proportion of oil unchecked but not less than 50 percent of the total which included drilling water and mud. The zone from which the production is coming is broken by unsaturated sections and is typically irregular. Two benches are producing, the upper one being from 5540 to 5620 feet and the lower from 6425 to 6591 feet, with the upper furnishing the major portion of the production.

Noble County: A new Wilcox field is showing at Gulf Oil Corporation's Juanita 1, NEc 1-21-1e, southeast of Otoe City development, but too far from the latter to have a relationship. The well on test late in the week was flowing at a rate of 25 barrels hourly from second Wilcox (Ordovician) sand at 4590 to 4597½ feet. The discovery is just south of a test which found the Wilcox dry but plugged back to Burgess sand to make a small producer. This vicinity is unpredictable and further drilling is necessary before the probable extent of the field can be estimated.

Okfuskee County: W. C. McBride's Brooks 1, SE NE SE 35-12-10e, is standing with 7-inch set at 3058 feet on top of Cromwell sand drilled to 3075 feet. The sand showed saturation and the operator is moving in tools to make a test. In addition to the favorable showing at this depth, the wildcat also had favorable shows in Gilcrease sand and on a drill-stem test made 310 feet of oil plus drilling fluid from the upper pay at 2832-65 feet.

Okfuskee County: C. W. Titus' Community 1, NWC SW 31-11-9e, is extending North Beardon two locations to the south in Cromwell sand. The test topped the body at 3362 feet and drilled to 3400 feet, still in the formation and finding it saturated. Casing is being run preparatory to testing.

Pottawatomie County: A new Wilcox sand field is in the making at Stanolind Oil & Gas Company's Rosebush 1, SW SW SW 19-8-2e, in the Macomb area. After first erring in assuming a soft section of Simpson dolomite to be sand, the well topped Second Wilcox at 6241 feet, drilled to 6251 feet, and on a drill-stem test made 960 feet of high-gravity oil into the hole and some 960 feet of oil-cut mud in 10 minutes, to indicate high pressure in the formation.

Kansas

New Field in West Kansas; Dual Well at Chitwood

A new field is being brought in off the established trend of development in Western Kansas where Mississippi lime is showing for production at Falcon-

Seaboard Drilling Company et al's Frevely 1, C SE SE 22-16-25w, 8 miles north of Aldrich field, also productive in Mississippi. The new strike emphasizes the probable importance of Mississippian formations in this area west of the Central Kansas Uplift where wildcatting indicates Kansas City-Lansing lime and Mississippi lime are two major prospective horizons. Frevely 1 had the lime at 4528 feet and drilled to 4580 feet after which the section was treated with 4000 gallons of acid. On test the well made 20 barrels per hour without showing any water. An additional treatment was being made with 500 gallons as the week closed and further testing was anticipated.

Barton County: A temporary potential of 434 barrels of 36 gravity oil has been granted Cities Service Oil Company's Eveleigh 1, NE NE SE 11-18-14w, 3 miles southeast of Boyd production, to prove a new field for this area. Perforated between 3305 and 3310 feet in Mississippian conglomerate, it made its production without showing water. Boyd production, proven in 1942, is likewise from Mississippi and there is a possibility, particularly in the light of recent development at Boyd, that the two areas are a common reservoir.

Pratt County: Lion Oil Refining Company's Chitwood 3, third well in the new Chitwood field on trend southwest of Cunningham, received a top potential after showing for 3932 barrels daily from Simpson sands at 4389 to 4405 feet. The well is a dual completion as it tested for 22,000,000 cubic feet in Viola lime at 4280 to 4290 feet, and will be produced from this horizon as well as from the Simpson section.

Clark County: Olson Oil Company's Central Life 1, CSF NE 23-32-24w, one of the deepest completions in the state is dry at 7054 feet in Arbuckle lime topped at 6940 feet. Topeka was topped at 3701 feet, Mississippi lime at 5569, Viola at 6626 and the Simpson at 6761 feet.

Nemaha County: Ohio Oil Company's Lamporter 1, C NE SW 3-2s-14w, in Northeast Kansas south of the Falls City area of Nebraska, is temporarily shut down at 3300 feet, still in Devonian-Silurian after drilling approximately 500 feet of this section. Hunton lime was topped at 2826 feet and a show of heavy oil was untested as the object of the well was to test Arbuckle lime.

Kentucky

Henderson County Discovery Completed on Pump

Woods & Lacey's Bauldauf 1, 15-Q-22, has been completed as the discovery well of the Geneva pool of Henderson County, pumping 10 barrels of oil and 100 barrels of water in 24 hours on initial test from Tar Springs sand at 1869-78 feet.

Kentucky had 74 operations this week and they included 64 wells drilling, 6 locations and 4 wells rigging tools. Eight first reports were recorded, including 2 wildcats.

Wildcat operations totaled 24 and of this number 22 were drilling, 1 was a location and 1 was rigging tools.

Five oil producers were completed with total initial production of 665 barrels. Three holes were dry and 1 location was abandoned.

West Texas

Upper Midland Basin Well Revives Pay Prospects

Seaboard Oil Company's Spraberry 1, Dawson County prospect, revived oil propects for the upper portion of the Midland basin in developing a small oil show from the Clear Fork section of the Permian, and was coring below 6917 feet. A drill stem test at 6870-6917 feet yielded 450 feet of rotary fluid, averaging 3 percent oil content without gas or water. Gulf Oil Corporation's Dean 1, projected Ellenburger test for the east edge of the county is idle for repairs at 10,293 feet.

Lynn County: Sohio Producing Company, new entrant as an active operator in West Texas, has contracted to drill two Lynn County wildcat blocks farmed out by Honolulu Oil Corporation. Operations are underway on Allsup 1, C SE NW E. L. Ry. 113, Block 12, 1¾ miles north by west of New Home, with a 6000-foot depth contract. The other test will be about 4 miles southeast of Wilson.

Andrews County: The Texas Company is starting two more tests on its Mabee pool discovery block of 14,000 acres, and has three pumpers in process of completion. The discovery is rated at 10 barrels hourly without acidizing, while Mabee 2, situated 5800 feet to the southwest, exhausted a water pocket at 4746 feet, then cored to 4762 feet without any recovery, and a test is pending. The company's Mabee 3, located 6500 feet east by north of the discovery, swabbed 341 barrels of fluid, averaging 14 percent b.s and no water, on a 24-hour test after using 12,000 gallons of acid at 4720 feet. Fill-up rate indicates it will make a 15-barrel per hour pumper. Mabee 4 and 5 will be a mile southeast and ¾-mile west, respectively from the original well. The Martin County wildcat of Mid-Continent Petroleum Corporation on the Mabee ranch and 9 miles northeast of the above pool, involves a deeper penetration of the Midland basin, and no shows have been logged in drilling below 5960 feet.

Deep Wildcats: Stanolind Oil & Gas Company's American Warehouse Company 15, the first deep test for the Cedar Lake field, Gaines County, has halted in hard lime and chert at 11,952 feet. It is due to deepen to the Ordovician when high-test steel is available for rock bits. In Sterling County, Phillips Petroleum Company's Glass-Sterling 1 quit in a prolific water zone in the Ellenburger at 9265-9310 feet. It is the fourth Ellenburger failure for the county. Gulf Oil Corporation's Edwards 1-B, Eastern Ward County, is drilling limy-chert at 7210 feet, and the company will be supported by 4 nearby lease owners in the drilling of D. E. Hughes 1, near the center of Section 8, Wm. Pittman Survey, Block L, Reagan County, to the Ellenburger.

Gaines County: Continental Oil Company's Jones 1-A is drilling lime and shale at 11,115 feet. Humble Oil & Refining Company's Cox 1 is drilling black lime at 10,060 feet. In the east portion of the county, The Texas Company's Parmer County 1 is drilling black lime at 7922 feet. Honolulu Oil Corporation's Homann 1, recent disappointment in the San Andres, will plug back from 5457 feet to perforate and try for completion as a dry gasser in the Yates near the 3500-foot level, as the company may drill another test to the south while a San Andres test is due to be started shortly to the southeast.

Winkler County: Sinclair Prairie Oil Company's Walton 4-A, deepest of 6 Ordovician tests in the Keystone area, recovered 50 feet of dark oil and 270 feet of oil cut mud along with 990 feet of rotary mud when a tester was used at 7268-88 feet at the Permian-Devonian contact.

North Texas

Gunsight Lime Well Proves 2000-Acre Wildcat Block

West Central Wilbarger County scored a prolific oil producer from the Gunsight lime when The Texas Company's Main 1, near C SE NE H&TC 16, Block 8 and on a wildcat block of 2000 acres, flowed 98 barrels on a 2½-hour unofficial test through open 2-inch tubing after using 1000 gallons of acid through perforations at 2800-03 and 2786-96 feet. Production is from the Gunsight, topped at 2770 feet, with nominal saturation at 2786-96 and 2808-23 feet, but was not tested in fulfilling depth contract at 4725 feet in granite wash. This discovery is on a strike along the arch that has accounted for the Fluhman pool, Wilbarger County, and Thalia area, Foard County. The company proposes to proceed with development of its block.

Cooke County: Seitz-Comegys & Seitz, Inc., McElreath & Suggett's Blankenship 1, northeast corner of Section 46, extended the South Walnut Bend one-well pool to the southeast and proved a new sand in swabbing 4 barrels of oil hourly on a preliminary test through perforations opposite saturation at 4479-83 feet. This well was drilled to 5614 feet, and topped dry Winger sand at 5556 feet, 4 feet low. Partnership's discovery for the area produces its bonus allowable when pumped part-time. The first failure for the Winger sand sector of the Walnut Bend field involved Magnolia Petroleum Company's McCreight 4, northwest corner Section 66, which was abandoned at 5918 feet with the first water showing when a tester was used at 5592-5612 feet. Top of the Winger was called at 5597 feet.

Clay County: Shell Oil Company's Wynn 1, C. Rooney Survey and 2⅝ miles east of the Stephens 2-well pool, opened a new oil area in flowing 174 barrels of oil and 23 barrels of acid water in 5 hours after using 1000 gallons of acid through perforations at 6200-08 feet opposite the Mississippian, topped at 6174 feet, 98 feet low to the nearest production. This wildcat made an unsuccessful try for production in the Ellenburger at 6706-6795 feet. The 261-foot Mississippian zone showed such favorable saturation and porosity that the usual drill-stem test was not made. Additional perforations will be made in this horizon. Continental Oil Company's Mayfield 1, south outpost for the Stephens pool, which showed an abundance of salt water in the Mississippian at 6098-6109 feet, was drilling 6575 feet to establish a water table in the Ellenburger, topped at 6535 feet, and is expected to be a failure.

Information

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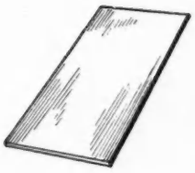

Sheet and Plate—Alloys A, B, and C are available as standard hot-rolled sheet and plate, subject to mill limitations of a maximum weight in alloys A and B of 275 lb., and in alloy C of 200 lb. for a single plate, and a minimum sheet thickness of 27 B.w.g. (0.016 in.).

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For complete information on available forms, penetration tests, and methods of fabrication, send for the 40-p. booklet, "Hastelloy High-Strength Alloys."

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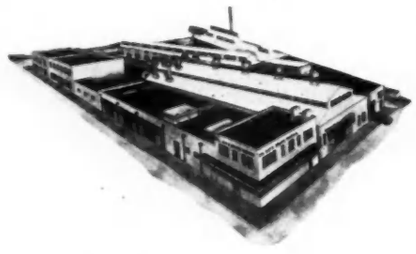

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New Fields in Jones And Coleman Counties

Natural flow of 154 barrels of oil through ¼-inch tubing choke was recorded by the Great Lakes Carbon Corporation's Hardy 1, SE SE H&TC 11, Block 4, in establishing new pool for north central Jones County 6 miles southwest of Stamford. Production is from perforations opposite Canyon sand at 3690-3702 feet. The oil tests 39.6 gravity. This discovery was carried to Strawn series at 4500-4812 feet, then plugged back for completion.

Coleman County: An oil discovery one-mile south of Novice was confirmed when Hunter & Hunter and Sohio Producing Company's Williams 1, C SE SW T&NO 18, Block 2, flowed 20 barrels oil natural through 7/16-inch choke on 24-hour gauge from broken saturated sand in gray section of the Strawn at 3745-60 feet.

Stephens County: Texas Pacific Coal & Oil Company's Brown 2-C, southeast offset to the company's Mississippian discovery in the Brown pool indicated flow of more than 10,000,000 feet of gas when tester was used in Marble Falls sand at 3976-89 feet, adding another prospective horizon for this virtually depleted Bend lime area. Drilling was resumed to try for oil production in the 4100-foot Mississippian.

East Texas

Van Zandt Wildcat Has Travis Peak Show

Discovery of oil production from Travis Peak sandy lime in Van Zandt County was in prospect for Superior Oil Company of California's Groves 1, 4½ miles north of Canton, which was making 3 to 5 barrels of fluid hourly averaging 60 percent of 35-gravity oil and balance salt water on swabbing test after using 7000 gallons of acid through perforations at 8550-70 feet. The well is void of gas and will be a small pumper but more development is assured for the structure. Delta Drilling Company et al's Gipson-Echols 1, three miles northwest of Grand Saline was drilling limey-shale 7050 feet on Travis Peak objective.

Morris County: Humble Oil & Refining Company's Wright 1, Omaha prospect entered Buckner zone near 10,295-foot level and drilling 10,370 feet to explore the Smackover.

Henderson County: Completion of Ed. Hyde-Pete Wiggins and Continental Oil Company's Landis 1 as a failure in the Woodbine at 5023-5225 feet proved to be the lowest structurally of a trio of tests drilled in October and November on their geophysical prospect, centering upon the Henderson-Anderson County line. However, a fourth test is under way through L. O. McMillan et al having been assigned Woodbine production rights to 350 acres for drilling of Gross 1, R. P. Pate Survey, situated about 1700 feet southwest of partnership's Warren 1, which established the position of the fault in logging the Woodbine at 4648-4816 feet, with elevation of 400 feet. McMillan was contractor for the first three tests.

Quitman Field: The fifth failure for the Quitman field that partially defined production to the north involved Magnolia Petroleum Company's White 1, which entered the Paluxy series at 6371 feet with water at 6392-6424 feet. Allhands and Briley's Jones-Werner 1, F. Herniger Survey, resumed drilling after landing 10¾-inch surface pipe at 763 feet. It is ¾-mile southwest of production, and the only active outpost.

Manziel Pool: Shell Oil Company's Whatley 1, southeast outpost and projected Travis Peak test, was to resume coring at 8505 feet after an incomplete drill-stem test at 8496-8505 feet in the Lower Glen Rose yielded 15 stands of water and 10 stands of slightly oil- and gas-cut mud. Nominal oil and stain and odor were logged at intervals after leaving the massive anhydrite at 8062 feet. The bonus allowable period for this Paluxy oil area was terminated November 22 when all wells were cut back to 80 barrels daily due to completion of the sixth producer.

Wood County: The high structural position of Gulf Oil Corporation's Brewer 1, 2½ miles southwest of Winnsboro, touched off an aggressive lease and royalty play that was voided when water was encountered in the Paluxy, topped at 6329 feet with an elevation of 479 feet. This wildcat was drilling at 6460 feet, and may continue to the Travis Peak. Danciger Oil & Refineries, Inc.'s Sparks 1, three miles southeast of Winnsboro, is drilling at 6140 feet on a Paluxy objective. Roy Golston et al's Riley 1, 4 miles east by south of Alba, is drilling at 5355 feet, and logged a nominal oil show in the Sub-Clarksville at 4440-85 feet, but proved dry in the Woodbine, topped at 4895 feet with elevation of 459 feet. Moncrief Bros. and Ed. Hyde's Simmons 1, a mile northeast of Golden, is drilling at 3530 feet, having logged the Pecan chalk at 2772-2950 feet with an elevation of 442 feet.

Rusk County: The Texas Company's Christian 1, near Tatum, halted in barren Travis Peak at 6945-7123 feet, and will abandon unless results are favorable on sidewall cores to be taken of the Pettit, topped at 6722 feet with an elevation of 378 feet. In the Henderson pool, Beacon Oil & Refining Company and American-Liberty Oil Company's Brown 1, situated 2000 feet east by south of their Pettit oil discovery, was showing a small volume of gas while unloading after using 1000 gallons of acid through Pettit perforations at 7244-64 feet. Top of the pay is about 14 feet low.

Smith County: Skelly Oil Company's Chisum 1, Sand Flat prospect, entered the Massive anhydrite at 8790 feet on the driller's call, about 20 feet low to a 9852-foot junked test situated 3½ miles to the north, and is drilling at 8895 feet. Both wildcats indicated oil production in the Paluxy, and prices on nearby leases and royalties have soared to proved acreage basis. Sun Oil Company's Patterson 1, west outpost, is drilling below the 9-inch casing seat at 1648 feet. Phillips Petroleum Company's McMinn 1, 6 miles south of Tyler, is idle for rig repairs at 6370 feet in the Georgetown, topped at 6070 feet with an elevation of 478 feet, and the company's Mayfield 1, southeast outpost for Chapel Hill field, is awaiting plugging orders at 8597 feet in the Travis Peak, topped extremely low at 8503 feet.

Robertson County: A. G. Hill et al's Anderson-Magnolia 1, third test for the Calvert faulted structure, restored circulation at 7269 feet with cotton seed hulls, and was drilling at 7320 feet to the Smackover lime objective.

Southwest Texas

New Production Being Tested in Four Counties

Magnolia Petroleum Company is making production tests in Ingram 1, wildcat 1½ miles southwest of Burnell and 2 miles southwest of the Burnell-Wilcox deep condensate discovery in the north portion of Bee County. A drill stem test at 6811-14 feet in Wilcox recovered 1100 feet of oil and around 150 feet of mud and water in 25 minutes. The hole is bottomed at 7021 feet with 5½-inch casing set to 6885 feet for completion. Other sands showed for gas or gas-distillate production.

Karnes County: Arkansas Fuel Oil Company is making first production test in Lyons 1, discoverer of field 2½ miles south of Runge. First perforations were made in the Reklaw section or in the 6600-foot horizon. A drill-stem test at 6598-6609 feet recovered 425 feet of 49-gravity oil in 15 minutes, 50 pounds working pressure. Total depth is 8020 feet with 5½-inch casing set to 6779 feet. This discovery is in east corner of D. C. Lyons survey, and is 7 miles northeast of Hondo Creek field.

Jackson County: A new field is assured, although probably small, 1 mile northwest of West Ranch field in Jackson County. Seaport Oil Company's Bennett 1, on drill-stem test at 5060-66 feet recovered 2000 feet of 25.1-gravity oil in 15 minutes. Other shows were logged at 5048-63 feet. A gas sand was found at 5582-85 feet in Frio section. This discovery is in block 30, J. M. Bennett Ranch subdivision of Ramon Musquez grant. Total depth is 5785 feet with 5½-inch casing set to 5657 feet.

Duval County: Pan American Production Company is opening a new field in the northeast portion of the county near the old Thomas-Lockhart field. Parr 1-B, GH&H 115 flowed 4 barrels of 43-gravity oil hourly on a drill-stem test in perforations at 4671-80 feet in Pettus sand. The test was through ¼-inch choke with 150 pounds working pressure. Located 2 miles east of Bridwell field, the hole is bottomed at 4727 feet with 5½-inch casing set to 4725 feet. Location has been made for Parr 1-D, 990 feet southwest of the discovery.

Blowouts: Gulf States Oil Company's Cavazos 1 in the San Salvador area of Hidalgo County is the second well in the Lower Coast belt to blow out recently. The Cavazos well, an old gas-distillate producer, was being deepened to around 9500 feet when it blew out about 8000 feet. It was originally completed in November, 1940.

Great Lakes Carbon Corporation's Yturria 1, 5 miles southwest of Port Isabel in Cameron County, blew out recently and caught fire, at 6005 feet. Operators were planning to drill to 11,000 feet and were preparing to set protection pipe around 6500 feet when it blew out.

Production Limit Decreased In Manziel Field

The Texas Railroad Commission last week amended its statewide order to limit production in the Manziel field, Wood County, to 22 days during December. The field had been exempt from shutdowns heretofore, under provisions of the new field allowable order.

Other orders of the Commission increased the West Texas allowable approximately 6000 barrels daily. Fields affected were North Cowden, Emma, Mascho, Fuhrman, and Means.

The statewide order for December provided that they might produce only 18 days, but the revised order will permit production for 22 days.

Texas Gulf Coast

Deep Wildcat Planned East of Conroe Field

One of the most interesting wells to be drilled in the Conroe area in years is promised with Atlantic Refining Company announcing it will drill a wildcat well on the east flank of the large reserve. Operators and geologists long have considered the Conroe field itself as a potential Wilcox producing horizon although the field is now producing from the Cockfield, and is the largest reserve on the Upper Texas Coast.

The new test is South Texas Development Company 1, on a 40-acre unit in lot 66, Clark Beach survey. The test is projected to 12,000 feet, and will be the deepest ever drilled in the area if the objective is reached.

Another important wildcat is projected 1½ miles inland from Galveston Bay and southwest of Jackson Pasture discovery in Chambers County. The test is Mayes 1 and is scheduled to drill to 11,500 feet. It is on a 40-acre unit in

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Robert Oliver survey. The well will be drilled by Wynn Crosby Drilling Company, driller of the Jackson Pasture discovery.

Discovery: Salt Dome Oil Corporation has opened a new gas field 5½ miles northwest of Louise in Wharton County with Menefee 1 in S. P. Middleton survey. Perforated at 4540-50 feet, the well flowed considerable gas and was shut in. Total depth is 4600 feet with 5½-in casing set near bottom. Rig has been skidded to location for Menefee 2, ½-mile northwest. The new test is contracted to 4700 feet.

Jefferson County: The Stowell area is still one of the most active fields on the coast. Glenn H. McCarthy, discoverer of this large reserve, has announced he will drill a wildcat 3 miles northwest of Hamshire and northwest of Stowell production. The test is on a 50-acre tract in Theodore F. Koch subdivision, Francisco Valmore survey, Projected depth is 10,000 feet.

Brazoria County: Humble Oil & Refining Company is running tubing for a production test in Houston Farms 3, wildcat in Rattlesnake Mound area. The drilled out total depth is around 11,000 feet with perforations made slightly above that level. It is reported a large gas well at least is assured for this area.

On the east flank of Danbury Dome, Stanolind Oil & Gas Company and Humble Oil & Refining Company are reported preparing to complete South Texas Rice Production 1, a deep test that has been drilling and testing for several months. The well has been testing in the 8900-foot horizon, and it is believed completion will be effected in this area.

Arkansas

Two Cotton Valley Strikes Spur Search for That Level

Possibility that much additional production may be obtained from the Cotton Valley formation in Arkansas is seen from recent wildcat developments, resulting in the opening of at least two new pools in the state from that depth, and a third from another level. November saw the start of several additional wildcat tests that will probably be taken to the Smackover formation, but it remained for two Cotton Valley producers to take the limelight.

Columbia County: Latest and probably most important strike is that obtained by Hollyfield and McFarlane in completion of Rowe 1, SW SW 16-17-20, in the Magnolia field. This new producer, in the northwest corner of the field, is the first such well to be completed in the Magnolia area, which has 115 producers in other zones. Plugged back from the lime where it had been giving salt water, the Rowe 1 started producing at the rate of 136 barrels of 41-gravity sweet oil per day, with a sweet gas ratio of 2500 cubic feet per barrel, on a 5/64-inch choke. If the well is produced on a larger choke, it is thought that the gas-oil ratio will probably drop to 1000 cubic feet and the oil production climb to around 300 barrels daily. Completion was from 5778 feet. Hollyfield and McFarlane are preparing to drill a second well north of the producer. Additional drilling in the Magnolia field proper as well as on the outside may result from the fact that the Arkansas Oil and Gas Commission will not permit dual completion of wells in the Magnolia field because of the difficulty from corrosion due to sour gas production.

Union County: Harold Wright's J. W. Cox 1, NE SE 8-17-18, just over the Columbia County line, obtained production from Cotton Valley at 5900 feet. In an official test the well produced 297 barrels of 41-gravity oil with a ratio of 450 cubic feet of gas per barrel, and no water. This new area probably will be called Mt. Holley Cotton Valley pool. Kerlyn Oil Company in completion of Union Saw Mill Company 1, NW SE NE 9-17-13, at 6000 feet. The well pumped 300 barrels during the first 24 hours. It is 2 miles from the old Rainbow City field, northeast of El Dorado, and the showing is expected to lead to additional activity in that area and the old east El Dorado field where several projects are in progress now.

Miller County: An agreement reached between the state commission and the district PAW office in Houston has opened the way for development of the newly-opened Wisinger pool. The agreement calls for 160-acre spacing in the field with one permit having been issued to bring about search for oil in both the upper and lower Gloyd sands below Hill sand in which the discovery well encountered production. The Gehrig Company of Arkansas will drill the new test in S½ SW 10-20-29. The state commission has recommended that the discovery well of N. H. Wheelis in Section 9-20-27, which has been closed in, be allowed to operate for a test period of 30 to 60 days until the well either produces 1,000,000 cubic feet of gas per day or 100 barrels of distillate.

South Louisiana

Second Well at Reddell Indicates Important Area

The Reddell area of Evangeline Parish is looming as a major high-gravity oil producing area with Danciger Oil & Refineries, H. J. Wier and W. D. Haas completing Haas 1, Section 22-4s-1w, in the Tate section of the Sparta. On a potential test, perforated at 9914-55 feet and 9905-11 feet, the well flowed 358 barrels of 58.2-gravity oil daily through ¼-inch choke; gasoil ratio 6800-1 with tubing pressure mounting to 2800 pounds, casing sealed. Several sections inside the Wilcox showed for gas-condensate production, although there is considerable faulting inside the deeper formation. Humble Oil & Refining Company's discovery of the area two weeks ago ran around 246 feet higher structurally than the Danciger producer.

Beauregard Parish: Sun Oil Company is making additional tests in Central Coal and Coke 1, Section 25-3s-11w, in Neale field area. It was last perforated at 10,990-11,115 feet. Previously tests were made at 10,940-50 feet and 10,860-90 feet, all of which flowed oil and salt water.

Evangeline Parish: One of the most interesting wells in the Pine Prairie area in recent months will be drilled by Hassie Hunt, Jr., on the north flank of the dome, Crowell-Spencer Lumber 10, Section 23-3s-1w, projected to 10,000 feet in Wilcox test. The south and west sides of the structure already produce from multiple sands, most of the sand sections being thick and prolific.

So let's gripe!

Just now each of us is a tooth in the reduction gear of war. Maybe we don't think about it that way, but it adds up to that. So long as we act like typical Americans, working like hell and grumbling and cussing the administration and saying how we think the war should be run, the teeth in the reduction gear will be bright and strong and hard. But if we ever grow afraid of words like "Armchair strategist" the teeth will be getting soft and the gears will be slipping. So let's gripe, grumble and opinionate with renewed vigor. We do our share and because of it, or in spite of it, the best men in the oil business still TRY PELCO FIRST. And get, with gratifying regularity, the supplies and equipment for which they try.

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North Louisiana

DeSoto Parish Wildcat Showing Possibiliites

A possible discovery was indicated at H. C. McCalman's Williams 1, Section 6-10n-12w, DeSoto Parish, four miles northeast of shallow production between Benson and Pelican. Casing has been set at 1795 feet. The well was reported showing great gas pressure with some oil before being shut in to prevent a blowout. Final testing is now under way.

Claiborne Parish: The Sugar Creek area shows renewed interest now that efforts are being made to complete one well, with location made for a new operation. Casing is set to 6227 feet at the Hassie Hunt Youngblood 1, Section 18-19n-5w, while location has been made for Hassie Hunt's Slaughter 1, NE SW 9-19n-5w, with plans to drill to 9000 feet.

Tensas Parish: Carter Oil Company's Shelly 2, SE NW 19-11n-10e, is flowing into tanks for the third completion in the Holly Ridge-Tuscaloosa producing zone. No official gauge has been announced. The well is a west offset to the Shelly 1 discovery and was drilled to 8454 feet with perforations from 8404 to 8428 feet. Union Producing Company had previously completed Penrod-Jordan 1, east offset to the discovery.

Michigan

Rose Lake Production Extended Half Mile

Rose Lake in Osceola County, a Traverse lime field, has been extended a half mile northwest by two wells and now is given a reasonable chance for still farther expansion on the west side of the developed area. Maguire, Inc.'s Sherwood 1, S½ NE SE 36-19n-10w, Le Roy Township, is flowing 35 barrels per day after 200 gallons of acid, the farthest west producer in the pool and a mile from the farthest east producer.

Operators are continuing to experience trouble in producing several wells in the pool due to a gas cap that rides a large part of the developed structure. Several experimental methods of producing are underway.

Ingham County: W. H. Colvin, Jr.'s Glasser 1, SE SE SE 14-3n-1e, wildcat, the deepest drilling operation in the state since 1941, is being converted from cable tools to rotary with new plans calling for an extra 2000 feet of hole. The test was drilled to 6599 feet with cable tools, spudded March 3 this year, and penetrated the St. Peter sand at 6581 feet. Water was encountered between 6590 and 6599 feet. If drilled to 8000 feet the test will still be short of Gulf Refining Company's Batson 1 in Bay County which went to 10,447 feet in 1941 for a state record.

Gratiot County: Weller and Caldwell's Davidson 1, Section 36-11n-3w, wildcat, increased from 5,870,000 to 9,100,000 feet of gas per day when deepened in the Stray sand from 899 to 903 feet where the pay was cemented off to permit deepening to the Dundee or about 3200 feet. Plans already have been announced for a gas drilling program in the area.

Permits: Fifteen drilling permits approved during the week pushed the year total to 572 to exceed by 2 the all-year total for 1942.

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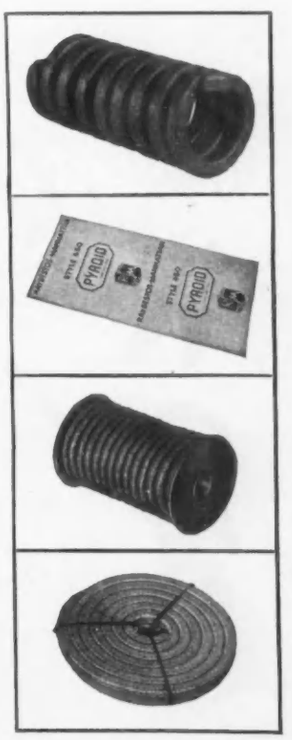

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Rocky Mountain Area

Two Discoveries Testing in Wyoming; 2 Colorado Starts

Fred Goodstein's Government 1, NE NE NW 13-47n-100w, important test of Little Buffalo Basin, Wyoming, is on production test and is swabbing 12 barrels of oil an hour from the Tensleep at 4785-4965 feet, total depth, with 7-inch production string cemented at 4787 feet. Ground elevation of the well is 5915 feet. The Little Buffalo Basin structure was proved for gas production in the Frontier sands in 1914 and nine Frontier wells have a potential of 100,000,000 cubic feet of gas daily. Goodstein controls several sections of land, not unitized at Little Buffalo, while Stanolind Oil & Gas Company, unit operator, on acreage jointly held with Ohio Oil Company covering 15,000 acres, is drilling a test on the unitized acreage. The unit area is approximately four times that of the proved gas acreage in the Frontier designated thus on experience at Elk Basin where the Tensleep productive of limits are proving some four times that of the Frontier sands.

Gebo Test: Continental Oil Company's Unit 1, SW NW SE 23-44n-99w, Gebo dome discovery, Wyoming, swabbed 20 barrels of oil an hour from the Embar zone through 111 perforations between 4890-4853 feet. The well encountered water in the Tensleep at 5171-5211 feet, total depth 5309 feet and has been plugged back to 4900 feet to complete in Embar lime. Ground elevation 4735 feet. Gebo dome is a broad, faulted anticline with 800 feet of closure, located on the southeastern rim of the Big Horn Basin. Continental Oil Company has the structure blocked solidly with approximately 6000 acres of which 3600 are unitized.

Test near Greeley: Ohio Oil Company is preparing to spud Nordlock 1, C SE SE 20-5n-63w, Colorado wildcat located 12 miles southeast of Greeley in Weld County, proposed to test through the Dakota series estimated around 8000 feet. The company is reported to have assembled a block of 50,000 acres covering five seismograph highs.

McElmo Dome Pennsylvanian Test: Stanolind Oil & Gas Company has a location for a Pennsylvanian test of McElmo Dome in Montezuma County, Southwestern Colorado, Government 1, C SW NW 24-36n-18w. Contract has been let to Manning & Brown.

Proceeds from California High Jinks Go to Red Cross

The wildcat committee of the California Oil and Gas Association will hold its annual Christmas dinner and High Jinks, December 15 in the Los Angeles Biltmore Bowl. Proceeds from the affair will be used to aid disabled service men. The beneficiary will be the Arts and Skills program administered by the Los Angeles Chapter of the American Red Cross.

Question

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California

Fresno County Wildcat Looks Good for Field

Prospects for a new Fresno County oil field, in the gap between Coalinga Nose and the northwest tip of Kettleman North Dome, appear in the making, according to unofficial scout reports. Standard Oil Company's Polvadero area wildcat, Bourdieu 1, NW NW SW 1-21-16, is reported to have picked up Grit at 10,257 feet, first Eocene at 10,264 feet and Green sand at 10,273 feet. Location is 4 miles southeast of Guijarral Hills, where the only important discovery of 1943 was made early in the year, and 2½ miles north of the northwest tip of Kettleman North Dome.

Apparently a second well must be drilled to determine whether a discovery made in the area two miles west of Mount Poso field, Kern County, has opened a new oil field. With all indications favoring expectations of a good yield of low-gravity oil, the initial test developed unexpectedly heavy gas output and negligible flow of crude. Operators are debating whether to kill the well for deepening or immediately to start a second well at a location down dip.

Kern County areas, in nearly all cases adjacent to producing fields, were chosen for the majority of several new wildcats starting this week. Shell Oil Company is surveying site for a Gosford area test 5 miles south of Kern Front; Union Oil Company has located Porter 24, SE SE NW 18-30-29, a try for a Mountain View extension; Western Gulf Oil Company filed location for a wildcat in NW SE SW 14-29-26, in Rosedale area, and the Temblor area 1½ miles northwest of Sheep Springs will be explored by Union Oil Company with a first well in the north half of 18-29-1.

Fresno County: Probably the best completion to date in the new Guijarral field, Robert S. Lytle's 3-28F, NW NW SW 28-20-16, flowed 2000 barrels daily on initial test. Its location is the most southeasterly in the field.

Kern County: Union Oil Company's Rio Bravo area wildcat, Kernco 8-81, 8-29-25, after early showings that gave rise to hopes it would prove an opener for a new field of importance, failed on all tests, and was abandoned at 10,165 feet. It is possible the showings obtained will be considered justification for a second try despite the great depth.

A completion expected to extend very considerably Greeley field production, Standard Oil Company's Wegis Commission 1, SW SW 21-29-26, flowed at the rate of 325 barrels daily. Hole is bottomed at 11,600 ft.

Richfield Oil Corporation's Tejon 6, second well in the Tejon Ranch field opened last month, topped the productive Chanac sand at 2101 feet, 72 feet higher than in Tejon 5, the discovery well 1000 ft north. The discovery well was brought in from 2372 feet, bottomed in oil sand. The second well, intended to be a test of the full section, has cored to 2700 feet and is drilling ahead.

Santa Barbara County: Continental Oil Company is seeking a counterpart of the rich Santa Maria Valley field off to the east of Santa Maria. Davis 1, SEc 28-10-33, has been staked as an initial test.

United States Well Completions

ARKANSAS

Columbia County — Smart - Stephens: Crow and O'Farrels' J. F. Smart D-2, ne se 12-15n-20w, pump 150 bbls, 3700 ft.

ARKANSAS WILDCAT

Columbia County—Failure: T. W. Lee's John I. Thompson 1, nw sw 14-15n-20w, Tokio 2500 ft, abnd in Travis 3500 ft.

CALIFORNIA

Fresno County—Coalinga: Guijarral Service Co.'s PVF-W 11, ne se nw 6-20-15, pump 30 bbls 13.5-gr oil, 15 bbls wtr, 100 ft perf 1318 ft, td 1318 ft.

Standard's 5-8-25D, se ne sw 25-20-14, pump 35 bbls, 306 ft perf 1435 ft, td 1440 ft.

Texas Co.'s C-9, ne sw se 6-20-15, pump 130 bbls 17.2-gr, 61 ft perf 2204 ft, td 2220 ft.

Fresno County — Helm: Amerada's Wheatville Ranch F-45-8, ne ne sw 8-17-18, flow 107 bbls 26.9-gr oil, 54,000 gas, 30 bbls wtr, 10/64-in, 475/0 lbs, 11 ft perf 7982 ft, td 8200 ft, pb 7984 ft.

Kern County—Belridge, South: Belridge Oil Co.'s 43-34, ne se nw 36-28-21, pump 75 bbls 16.1-gr oil, 7 bbls wtr, perf 604-765, 874-1251 ft, td 1251 ft.

Belridge Oil Co.'s 53A-34, nw sw ne 34-28-21, pump 70 bbls 16.2 gr oil, 8 wtr, perf 594-750, 864-1200 ft, td 1200 ft.

Chanslor Canfield Midway Oil Co.'s B. F. 11-3, ne ne se 11-29-21, pump 25 bbls 14-gr, 5 sand perf 1170-1160, 1100-1085 ft, td 1380 ft.

Chanslor Canfield Midway Oil Co.'s B. F. 11-14, ne sw sw 11-29-21, pump 15 bbls 14-gr oil, 8 bbls wtr, perf 1255-1250, 1188-1182, 1145-1140 ft, td 1410 ft.

General Petroleum Corp.'s 37-2 ne sw ne 2-29-21, pump 73 bbls 14.4-gr, perf 592-699, 729-61, 839-69, 906-1003 ft, td 1004 ft.

Shell's F.K.L. 10, sw sw se 1-29-21, perf 1148-1127, 1101-1068, 1071-919 ft, td 1150 ft.

Kern County—Buena Vista Hills: Standard's 8-23B, ne ne ne 23-31-23, pump 119 bbls 26.6-gr oil, 22 bbls wtr, 70 ft perf 4130 ft, td 4140 ft.

Kern County—Kern Front: Carrec Oil Co.'s 11, sw se sw 11-28-27, pump 75 bbls 14.2-gr, 155 ft perf 2007 ft, td 2007 ft.

Kern County — Kettleman, North Dome: Standard's 32-33J se nw nw 33-21-17, flow 503 bbls, td 8340 ft.

Kern County — Midway-Sunset: Standard's 1-15A, nw nw ne 15-31-22, 79 ft perf 659 ft, td 1210 ft, pb and abnd 659 ft.

Kern County—Poso Creek-Premier: Standard's 3-2-21, se nw nw 21-28-27, pump 39 bbls 12.5-gr oil, 15 bbls wtr, 106 ft perf 2920 ft, td 2925 ft.

Westates Petroleum Co.'s Cauley 47, sw sw 16-28-27, pump 36 bbls 14.7-gr oil, 7 bbls wtr, perf 2850-92 ft, td 2932 ft.

Los Angeles County — Del Valle: R. E. Havenstrite, Operator's Barnes 3 sw nw sw 16-4-17, flow 726 bbls 34-gr oil, 80 bbls wtr, 220,000 gas, 22/64-in, 490/1000 lbs, 55 ft perf 5526 ft, Vasquez 5275 ft, Videgain 5480 ft, td 5526 ft.

Los Angeles County—Torrance: George D. Nordenholt, Operator's Rico 2, 60 ft sly alg c/l Susanna Ave fr c/l Pearl St thence 107 ft wly at r/a, pump 65 bbls 17.5-gr perf 2777-2861, 2919-3306 ft, td 3221 ft.

Harold C. Morton's Carson 18, 1375 ft s 1280 ft w nw cor Henrietta and Huntington Aves, pump 110 bbls 14.5-gr, perf 2888-2961, 3050-3345 ft, td 3370 ft.

Los Angeles County—Wilmington: Brain, Cooper & Associates' 909 Comm. 3, 196 ft s 211 ft w c/l Robidoux and Frigate Sts, pump 105 bbls 16.8-gr oil, 45 bbls wtr, perf 3255-3442, 3526-3666 ft, td 3670 ft.

M. A. K. Petroleum Co.'s 8, 141 ft s 162 ft e c/l "L" and McDonald Aves, pump 135 bbls 15-gr oil, 30 bbls wtr, perf 3055-3162, 3248-3350, 3568-3640, 3713-3744 ft, td 3744 ft.

Morton & Dolley's Meeker 3, 457 ft w alg c/l Papeete St, fr c/l Wilmington Blvd, thence 130 ft n at r/a, perf 3132-3362, 3527-3679 ft, td 3778 ft, pb 3682 ft.

Orange County—Huntington Beach: Signal Oil & Gas Co.'s Bolsa 52-A 2302 ft n 2338 ft w swc Plot C of Standard Bolsa Lse, pump est 150 bbls, 825 ft perf 4739, td 4800 ft.

Standard's A-51, 1053 ft sly alg c/l 23rd St fr c/l Wesley Ave then 330 ft nwly at r/a, pump 47 bbls 17.1-gr oil, 4 bbls wtr, 413 ft perf 3593 ft, td 3595 ft.

Santa Barbara County—Cat Canyon: Pacific Western Oil Corp.'s Los Alamos 24, 5610 ft sly 1650 ft ely fr nwc Rancho Los Alamos, flow 1176 bbls 15.8-gr, 818 ft perf 5766 ft, td 5766 ft.

Santa Barbara County—Santa Maria Valley: Union's Russell 5, 330 ft n 990 ft swc Russell ppty 21-10-34, pump 183 bbls oil, 70 bbls wtr, 447 ft perf 4818 ft, td 4825 ft, pb 4818 ft.

CALIFORNIA WILDCATS

Fresno County—Failure: Pure Seaboard Oil Corp.'s Corehole 4, nw sw ne 36-16-13, Cantua Creek area, abnd 2786 ft.

Kern County—Failure: Berry Oil Co.'s 99, sw ne se 30-28-21, Belridge, South area, bailed wet, abnd 710 ft.

Kern County—Discovery: Da Me Oil Co.'s 4, nw nw sw 27-26-28, Mount Poso area, pump 10 bbls 12-gr oil, 50 bbls wtr, 110 ft perf 1370 ft, probably small extension Mount Poso field, top oil sand 1240 ft, Vedder 1260 ft, td 1370 ft.

Kern County—Discovery: Dwight G. Vedder's 1-18, nw nw se 18-27-28, Mount Poso area, blowing little gas with oil, 30 ft perf 2470 ft, Vedder 2440 ft, opens new pool abt 2 miles from nearest prod, td 2470 ft.

Los Angeles County—Failure: British American's Coleman 1, se ne se 25-1-18, Calabassas area, Miocene shale, abnd 1725 ft.

Los Angeles County — Failure: General Petroleum Corp.'s Mendota 1, ne se ne 22-3-16, Rice Canyon area, shows 5157-4250 ft, 1951-1966 ft, perf 2020 ft, flows salt wtr, abnd 6834 ft.

Tulare County—Failure: Richfield Oil Corp.'s Terra Bella Comm. 1-1, Terra Bella area, abnd

COLORADO

Weld County: Ohio Oil Co.'s Nordlock 1, se se se 20-5n-63w, Hardin district, rig.

Yuma County: Mutual Oil Co.'s Pletcher 1, se se se 27-1s-46w, Wray district, rig.

LaPlata County: Ashback & Lock's Krueger 1, c sw ne 34-33n-12w, Red Mesa district, lcn.

Montezuma County: Stanolind Oil & Gas Co.'s Gov't 1, c sw nw 24-36-18w, McElmo dome, lcn.

COLORADO WILDCAT

Rio Blanco County—South Douglas Creek: Superior Oil Co.'s Fee 1, ne ne se 12-4s-102w, abnd 7917 ft.

KANSAS

Barber County—Medicine Lodge: Barbara Oil's Laswell 2, c ne 30-33s-13w, Viola 5056-72 ft, 12,000 gas, 5040 ft.

Barton County—Kraft Prusa: Sinclair Prairie's Martha Edwards 2, c se se 18-16s-11w, Arb 3398 ft, ns, abnd 3405 ft.

Gulf's Martha Case 1, ne ne nw 25-16s-12w, Arb 3350 ft, pump 600 bbls, 3365 ft.

Barton County—Feltz: Derby et al's Christians 1, n½ sw se 10-16s-12w, Quartzite 3383 ft, ns, abnd 3390 ft.

Barton County—Feltes: Gulf's Minnie 1, n½ ne ne 23-16s-12w, Arb 3333 ft, pump 139 bbls 11 hrs, 3350 ft.

Barton County—W. Ainsworth: Black-Marshall's Ainsworth 8, nw nw nw 33-16s-13w, Arb 3383-86 ft, pump 182 bbls, 3389 ft.

Cowley County—Rahn: B. B. Blair & C. L. McMahon's Lester 1, sw se sw 6-34s-6e, Miss 2958 ft, shot 30 qts, pump 3 bbls oil, 1 bbl wtr, abnd 2959 ft.

Ellsworth County — Stoltenberg: Duwe & Farris' Phelan 1, c ne nw 12-17s-10w, Arb 3270-82 ft, 1000 gals acid, pump 200 bbls oil and wtr, 3299 ft.

Ellsworth County—Bloomer: Atlantic's Germinhardt "B" 6, nw se sw 31-17s-10w, Pre-Cambrian Schis 3390 ft, 6000 gals acid, shot 35 qts, input test 24 gals wtr min, 3714 ft.

McPherson County — Voshel: Kent-Harris' Flaming 1, se se nw 16-21s-3w, 'Miss 3018 ft, ns, abnd 3386 ft.

Phillips County—Ray: Phillips' Demuth 1, sw sw sw 22-5s-20w, Lans 3343 ft, Arb 3608 ft, 3000 gals acid, bail 1 bbl wtr, no oil, td 3649, pb and abnd 3579 ft.

Phillips County—Un-named: Cities Service's Hartshorn 1, sw ne sw 27-5s-20w, Lans 3321 ft, Arb 3617 ft, perf, 3000 gals acid, pump 3½ bbls fluid per hr, 75% wtr, td 3630 ft, abnd 3490 ft.

Pratt County—Chetwood: Lion's Chetwood 2, ne ne nw 23-28s-12w, Arb 4485 ft, perf, 1000 gals acid, flow 10.8 bbls per hr for 4 hrs, BHB test 2868 bbl, 4498 ft.

Reno County—Zenith: Auto Ordnance's Porter 2, c ne ne 7-24s-10w, Misener 3742 ft, 4900 gals acid, swab 5 gals oil, 40 wtr per hr, abnd 3771 ft.

Rice County—Volkland: Aylward & Eldorado's Brown 1, se se se 22-18s-9w, Arb 3270 ft, abnd 3294 ft.

Rooks County—Kruse: Coop and Tom Allen's Hedges 1, c sw sw 35-9s-16w, Lans 3190 ft, abnd 3408 ft.

Russell County — Hall - Gurney: Coralena's Fink 2, c ne sw 15-14s-14w, KC 3017 ft, 2000 gals acid, pump 219 bbls, 3049 ft.

Russell County—Greenvale: Jones & Shelbourne's Ruhnle 9, c w½ sw 4-15s-12w, Gorham 3263 ft, pay 3263-66 ft, pump 123 bbls, 3267 ft.

Russell County—Gastason: Stanolind's Kastrup 1, s½ sw nw 14-15s-12w, (owpb) otd 3200 ft, Arb 3197 ft, pb to 3178 ft, perf, 2500 gals acid, pump 121 bbls oil, 24 wtr, 3178 ft.

Russell County—Forrest Hill: Helmerich-Payne and Phillips' Lourmann 1, c sw se 29-15s-12w, Arb 3331 ft, abnd 3370 ft.

Russell County — Trapp: Cities Service's

Wells Completed in United States in Week Ended December 4, 1943

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama	....	....	....	....	....	....	....	....	....	....	....	....	2	3
Arizona	....	....	....	....	....	....	....	....	....	....	....	....	5	2
Arkansas	1	....	....	1	1	....	....	....	1	1	2	4	204	218
California	25	....	....	1	26	....	2	....	5	7	33	24	1,343	755
Colorado	....	....	....	....	....	....	....	....	1	1	1	....	24	15
Florida	....	....	....	....	....	....	....	....	....	....	....	....	5	1
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	1	2
Illinois	....	....	....	....	....	....	....	....	....	....	....	33	1,660	2,006
Indiana	....	....	....	....	....	....	....	....	....	....	....	9	251	363
Kansas	13	1	1	13	28	2	....	....	....	....	30	49	1,628	1,522
Kentucky	....	....	....	....	....	....	....	....	....	....	....	11	388	155
Louisiana	1	....	....	2	3	....	1	....	....	1	4	9	526	871
North Louisiana	....	....	....	....	....	....	....	....	....	....	....	5	202	.....
South Louisiana	1	....	....	2	3	....	1	....	....	1	4	4	324	.....
Michigan	7	....	....	3	10	....	....	....	5	5	15	13	560	633
Mississippi	....	....	....	....	....	....	....	....	....	....	....	....	35	100
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	27	34
Montana	5	2	....	4	11	....	2	....	1	3	14	....	222	193
Nebraska	....	....	....	....	....	....	....	....	....	....	....	....	....	28
New Mexico	7	....	....	3	10	....	....	....	2	2	12	6	257	362
New York	15	....	10	1	26	....	....	....	....	....	26	26	1,167	1,165
Ohio	5	3	....	1	9	....	....	....	....	....	9	6	716	1,061
Oklahoma	11	3	3	8	25	4	1	....	2	3	32	47	1,374	1,331
Pennsylvania	32	3	20	....	55	....	....	....	....	....	55	51	2,575	3,718
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	6	8
Texas	65	1	1	14	81	6	1	....	28	29	116	101	4,025	4,970
E. Tex. Bor. Co.'s	....	....	....	....	....	....	....	....	....	....	....	....	18	.....
E. Texas Field	....	....	....	....	....	....	....	....	....	....	....	....	5	.....
Rest of E. Texas	3	....	1	1	5	....	....	....	4	4	9	11	238	.....
North Texas	16	....	....	7	23	2	1	....	5	6	31	31	1,006	.....
W. Central Texas	3	....	....	2	5	2	....	....	1	1	8	7	362	.....
West Texas	22	....	....	....	22	1	....	....	2	2	25	16	897	.....
Texas Panhandle	5	....	....	....	5	1	....	....	....	....	6	4	186	.....
G. Coast, Upper	5	....	....	2	7	....	....	....	6	6	13	8	315	.....
G. Coast, Lower	7	1	....	....	8	....	....	....	4	4	12	13	591	.....
Southwest Texas	3	....	....	2	5	....	....	....	3	3	8	7	345	.....
S. Central Texas	1	....	....	....	1	....	....	....	3	3	4	4	62	.....
West Virginia	4	20	....	2	26	....	....	....	....	....	26	13	656	713
Wyoming	4	2	....	....	6	....	....	....	....	....	6	....	117	98
Total U.S.	192	33	35	52	316	12	7	....	44	52	381	402	17,838	20,327

* Includes distillate wells. † Includes salt water disposal wells.

Tittel C-5, c se nw 13-15s-14w, Lans 3084 ft, abnd 3383 ft.

Saline County—Hunter: Deep Rock's Tressin 1, ne nw ne 20-16s-1w, Miss 2641 ft, 1000 gals acid, pump 100 bbls, 2667 ft.

Saline County—Un-named: Deep Rock's Ida Tressin 1, ne sw ne 20-16s-1w, Miss 2607 ft, 500 gals acid, pump 120 bbls, 2625½ ft.

Saline County—Hunter: Deep Rock's Van Meter 1, ne nw se 20-16s-1w, OW Retest, Miss 2652 ft, echo test, 5494 bbls, otd 2665 ft.

Saline County—Hunter: Deep Rock's Peterson 1, ne ne nw 29-16s-1w, Miss 2621 ft, 2000 gals acid, pump 200 bbls oil, 200 wtr, 2645 ft.

Sheridan County—Studley: Union's Pratt 6, nw nw sw 23-8s-26w, Lans 3596 ft, abnd 3769 ft.

Stafford County—Drach: Stanolind's Eisen B-1, se se nw 6-22s-12w, Arb 3686 ft, abnd 3694 ft.

Stafford County—Drach: Stanolind's Krankenberg 4, c nw sw 6-22s-12w, Arb 3660 ft, 1000 gals acid, pump 418 bbls, 3663 ft.

KANSAS WELLS DEEPENED

McPherson County—Ritz-Canton: Max Cohen's Oberman 3, se se se 20-19s-1w, otd 3110 ft, Viola 3389 ft, Simpson 3427 ft, abnd 3456 ft.

Woodson County—Winterchied: Skelly's Rhea A-1, sw sw se 13-24s-13e, Arb 1937 ft, otd 1579 ft, abnd 1976 ft.

SOUTH LOUISIANA

Evangeline Parish—Ville Platte: Continental's Foret 1, 1866 ft s 51° 15 mins e on swl sec 43 & 330 ft n 38° 45 mins e fr w cor sec 43-3s-2e, abnd 10,430 ft.

LaFourche Parish—Bully Camp: Texas Gulf Sulphur Co.'s Delta Securities 18, 1140 ft w & 150 ft n of se cor sec 36-18s-20e, abnd 1679 ft.

Terrebonne Parish—Gibson: Shell's Pelican 13, 2725 ft n 09° 53 mins w fr sw cor sec 35, thence 2970 ft n 89° 07 mins e at ra in sec 35-17s-15e, 5½-in 9284 ft, perf 9246-50 ft, flow 325 bbls, 9/64-in, td 9540 ft.

SOUTH LOUISIANA WILDCAT

Evangeline Parish—Discovery: Danciger, H. J. Wier & W. D. Haas, Jr. co-discovery well at Reddell, start sw cor sec 22 go n 36° w 5152 ft, th n 58° 40 mins e 1612 ft in sec 22-4s-1w, set 6-in 12,196 ft, perf 9914-55 ft, 9905-11 ft in Tate sand, flow 358 bbls, ¼-in, td 12,206 ft.

MICHIGAN

Allegan County — South Zeeland: J. E. Hood's Boeve 1, nw nw ne 6-4n-14w, Traverse, dry, td 1654 ft.

Allegan County—Trowbridge: Roth & Bauerla's O'Dell 2, nw nw sw 20-1n-13w, Traverse, dry, td 1358 ft.

F. T. Cannon's Dickinson 1, ne se sw, 31-1n-13w, Traverse, pump 6 bbls, td 1327 ft.

Arenac County—Adams: Ervin Major's Horton 1, c se sw 28-19n-3e, Monroe, dry, td 4601 ft.

Mecosta County—Fork: Gulf's Meier 1, c nw se 7-16n-7w, Dundee lime, flow 173 bbls 6 hrs, td 3865 ft.

Newaygo County—Goodwell: Pure's Detroit Trust 2, e½ sw se, 8-14n-11w, Traverse, flow 218 bbls 21 hrs, td 3562 ft, pb 2760 ft.

Osceola County—Rose Lake: Union Drilling & Producing Co.'s Ruhl 1, c nw ne, 6-18n-9w, Traverse, flow 432 bbls 13 hrs, td 3179 ft.

C. L. Maguire's Sherwood 1, s½ ne se 36-19n-10w, Traverse, flow 36 bbls, td 3175 ft.

Ohio Oil Co.'s Howe 3, s½ nw sw 31-19n-9w, Traverse, flow 224 bbls, td 3150 ft.

Osceola County—East Evart: Sun's Smith 1, n½ sw se 25-18n-8w, Dundee lime, dry, td 3855 ft.

Van Buren County—Bloomingdale: J. H. Fitchett's Stewart 7, nw sw ne 7-1s-14w, Traverse, pump 74 bbls, td 1194 ft.

MICHIGAN WILDCATS

Barry County — Failure: Three A Drilling Co.'s Burns 1, ne sw ne 6-4n-9w, Traverse lime, td 2045 ft.

Clare County—Failure: Turner Pet. Corp.'s Hildenbrandt 1, n½ nw ne 34-18n-3w, Stray-Marshall, td 1556 ft.

Gratiot County—Failure: Prudential Gas & Oil Co.'s Schnaap 1, ne ne sw, Stray sand, td 1045 ft.

Missaukee County — Failure: Freeman Oil Co.'s Allen 1, e½ se se 19-23n-6w, Dundee 3710 ft, td 3812 ft.

Roscommon County—Failure: American Drilling Co.'s State A-1, s½ sw sw 19-21n-3w, Dundee 3930 ft, td 4375 ft.

MONTANA

Carbon County: Ohio Oil Co.'s Elk 9, ne se sw 35-9s-23e, flow 100 bbls, 6⅝-in 4200 ft, Tensleep 3160-3244 ft.

Glacier County—Cut Bank: Kullberg Oil Co.'s Tribal 3-185, se nw sw 19-32n-5w, Cut Bank sand 2851-2862 ft, swab 75 bbls, shot 80 qts, td 2865 ft.

Glacier Production Co.'s Hope Unit 1, ne ne sw 17-34n-5w, abnd 2750 ft.

R. C. Tarrant's Wiley-Jones 5, c se sw 31-34n-5w, abnd 2873 ft.

P. B. Anderson Co.'s Fee 1, se ne sw 31-32n-5w, swab 52 bbls, Lower Cut Bank sd 3037-3053 ft, td 3058 ft.

Pondera County—Midway: Texas Co.'s Norma Keil 1, nw sw se 3-28n-1e, sulphur wtr, abnd 2024 ft.

Rosebud County—Ingomar: Northern Ordnance's Hillison 1, c ne se 22-9n-35e, Amsden 3910-4030 ft, 8,200,000 gas, 1000 lbs, 3000 gals acid, td 5814 ft, pb 4119 ft.

Toole County—Border Area: Northern Ordnance's State 1-Cl, c sw sw 5-37n-4w, abnd 2789 ft.

Toole County—Kevin-Sunburst: J. H. Agen Oil Co.'s Goeddertz 8, ne sw ne 16-35n-3w, pump 5 bbls, Ellis-Madison 1800-1807 ft.

Prevol & Shay's Government 4, Unit 2, ne ne ne 15-35n-3w, lime 1825-1835 ft, pump 5 bbls oil, 16 bbls water, 1000 gals acid, td 1916 ft, pb 1840 ft.

Henry Vander Pas' Zachor 4, se ne sw 20-35n-1w, 500 gals acid, pump 28 bbls, Ellis-Madison 1522-1524 ft.

Toole County—South Shelby: Nadeau Bros.' State 1, cel ne sw 36-32n-3w, 3,000,000 gas, sand 1315-1320 ft.

MONTANA WILDCATS

Toole County—Dunkirk: Lucky Seven Oil Co.'s Knutson 1, ne sw ne 4-31n-1e, pump 3 bbls, shot 60 qts, Ellis-Madison 1734-1746 ft, td 1754 ft, pb 1751 ft.

Toole County—Grandview: Northern Ordnance's Kevin-State 1, c ne ne 36-35n-1e, abnd 1991 ft.

Liberty County—East Utopia: Texas Co.'s State 1-E, nw se se 10-33n-4e, pump 19 bbls oil, 10 bbls water, Ellis-Madison 2578-2579 ft.

NEW MEXICO

Eddy County—Dixon: Yates Oil Co.'s Day 4, c se se 12-18s-29e, flow 200 bbls, 2-in, shot 120 qts 2728-58 ft.

Fren Oil Co.'s Friess 2, c e½ se se 19-17s-31e, flow 100 bbls, 2-in, shot 320 qts 1903-91 ft, td 2002 ft.

W. R. McKenzie et al's Yates 2, se ne ne 7-20s-29e, elev 3276 ft, salt 450-796 ft, Yates 1115 ft, abnd 1135 ft.

Penn Surgical Co.'s Ballard 3-B, ne sw nw 8-18s-29e, flow 125 bbls, 2-in, shot 680 qts 2455-2665 ft, td 2673 ft.

Sudderth & Hix's Vickers 1, c ne ne 23-20s-28e, pump 350 bbls, 903-16 ft.

Martin Yates and Ralph Nix's Matthews 2, c nw sw 21-21s-28e, abnd 1010 ft.

Lea County—Lynn: T. P. Coal & Oil Co.'s State 10-A, c nw sw 9-23s-36e, Yates 3243 ft, flow 576 bbls, 2-in, acid 1000 gals 3606-12 ft, td 3718 ft, pb 3612 ft.

Lea County — Maljamar: Barney Cockburn et al's State-Shell 1, c nw sw 29-17s-33e, flow 552 bbls, 2-in, shot 320 qts 4166-4273 ft.

Barney Cockburn et al's State-Shell 3, c ne sw 29-17s-33e, flow 552 bbls, 2-in, shot 320 qts 4196-4296 ft, td 4300 ft.

McKinley County: Chas. H. Dibble et al's Santa Fe & Pacific Ry. 1, 2310 ft snl 810 ft wel 29-20n-9w, abnd 586 ft.

NEW MEXICO WILDCATS

Eddy County—Failure: Trumter Pet. Corp.'s Boulter 1, nw sw ne 28-19s-27e, abnd 951 ft.

Lea County—Failure: Tevis S. Morrow et al's State 1, 660 ft snl 600 ft ewl 22-12s-35e, elev 4071 ft, anhydrite 2110 ft, salt 2220-2830 ft, Yates 2900 ft, abnd 5225 ft.

OKLAHOMA

Caddo County—W. Cement: George Pace et al's Prentice 1A, ne nw sw 6-5n-9w, Noble-

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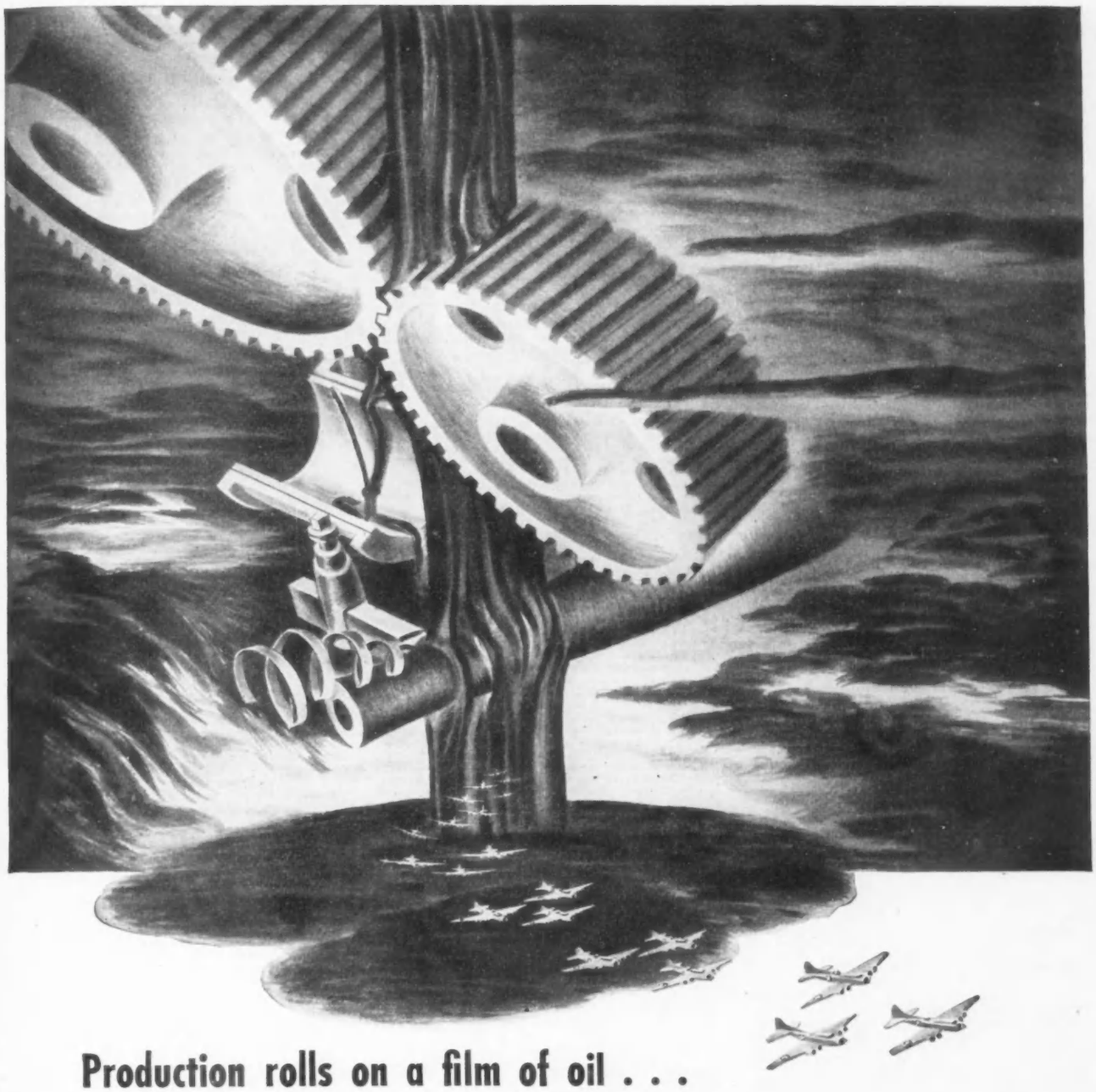

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GULF OIL CORPORATION—GULF REFINING COMPANY, PITTSBURGH, PENNA.

Olson 3350-69 ft, perf, pump 35 bbls, pb 3370 ft, td 7028 ft.

Comanche County—Ft. Sill: Northern Ordnance's Coffin 1, sw ne sw 20-3n-10w, 1000 gals acid, shot 25 qts, bail 3½ bbls oil, 1102 ft.

Creek County—Hickory Grove: Sun's Low 1, nw nw se 10-14n-7e, Prue 2677 ft, abnd 2740 ft.

Creek County — Un-named: Toklan Roy Corp.'s Vanderslice 1, nw sw se 30-14n-7e, Prue 2815 ft, shot 30 qts, 6,200,000 gas, pb to 2830 ft, td 2841 ft.

Creek County—Cushing: Sinclair Prairie's Litchfield 44, sw nw nw 22-17n-7e, Bart 2748 ft, shot 100 qts, pump 25 bbls oil, 32 wtr, 2846 ft.

Creek County—Kellyville: Rose B. Wright's Dawson 14, ne sw sw 24-17n-10e, Red Fork 1834 ft, pump 20 bbls, 1852 ft.

Creek County—Olive: J. E. Crosbie's Escoe 14, sw se sw 26-18n-8e, Red Fork 2602 ft, shot 200 qts, pump 35 bbls, 2632 ft.

Creek County—Cushing: Dunn & Miller's Anthis 1, se nw se 36-19n-7e, Wx 3305 ft, abnd 3312 ft.

Garvin County—Pauls Valley: Texas Co.'s Patchell A-2, nw se se 25-4n-1w, flow 1935 bbls, pb 4052 ft, td 4071 ft.

Garvin County—Pauls Valley: Cities Service's Wimberley A-1, se sw nw 25-4n-1w (OWWO) otd 4076 ft, previously comp as Bromide producer, Penn 3983-95 ft, flow 490 bbls, 3998 ft.

Lincoln County — Payson: Danciger's Kittridge 1, se se ne 7-12n-5e, Skinner 4182 ft, Bart 4285 ft-4307 ft, abnd 4334 ft.

Lincoln County — Chandler: Great Lakes Carbon's James 1, nw sw sw 2-14n-3e, Oswego 4020 ft, 6000 gals acid, flow 10 bbls, 4436 ft.

Logan County—Lovell: Champlin's McGinty 1, sw se se 9-18n-4w, 2 Wx 6240 ft, abnd 3200 ft.

Logan County—Un-named: Champlin's Knecht 2, sw se nw 21-18n-4w, sand 3425-48 ft, 11,400,000 gas, 3458 ft.

Okfuskee County—NE Dill: Midco's Taylor 1, c se se 13-12n-8e, Cromwell 3482 ft, flow 140 bbls, 3501 ft.

Okfuskee County—N. Baltimore: Eagle Picher's Gill 1, ne nw se 12-12n-11e, Dutcher 2575-80 ft, 500,000 gas, otd 3495 ft, pb to 2750 ft.

Okfuskee County—Un-named: Northern Ordnance's Jepson 1, c sw ne 7-13n-7e, Hunton 4012 ft, 3000 gals acid, 4,200,000 gas, 4026 ft.

Okfuskee County: Northern Ordnance's Tiger 1, c nw nw Woodford 4090 ft, abnd 4141 ft.

Oklahoma County—Oklahoma City: F. Russell's Duke 1, nw nw sw 22-12n-3w, Wx 6496 ft, abnd 6545 ft.

Okmulgee County—Okmulgee: Wood Oil Co.'s Johnson 2A, sw nw sw 27-13n-13e, Input well, td 1748 ft.

Osage County—Osage City: Ohio's Input well, ne se sw 36-22n-8e, 571 ft.

Osage County — Burbank: Phillips' Input well, sw sw se 5-26n-6e, Bart 2910 ft, td 2978 ft.

Pawnee County—E. Watchorn: Champlin's River Bed 1, se ne se 23-23n-3e, Wx 3829 ft, flow 166 bbls, 100,000 gas, 3842 ft.

Stephens County—W. Loco: Texas Co.'s J. W. Vandervort 2, ne nw se 8-3s-5w, Loco Sd Prod, pump 16 bbls oil in 6 hrs, 993 ft.

Stephens County—Velma: Skelly's Frensley "D" 1, s½ nw nw 25-1s-5w, abnd 2003 ft.

OKLAHOMA WELLS DEEPENED

Creek County — Glenn: Sinclair Prairie's Berryhill 13, ne ne ne 16-17n-12e, otd 1554 ft, Glenn 1546-86 ft, pump 5 bbls, 1586 ft.

Okfuskee County—Dill: Phillips' Replogle 3, nw sw nw 26-12n-8e, otd 3686 ft, Cromwell 3675-94 ft, pump 33 bbls, 3694 ft.

Osage County—Quapaw: Cities Service's Unnamed 459, se se ne 28-25n-10e, otd 1908 ft, Arb 2143 ft, 500 gals acid, 2,900,000 gas, 2156 ft.

Stephens County — Un-named: Magnolia's London 1, nw se ne 26-1s-5w, otd 1400 ft, shot 20 qts at 1376-96 ft, pump 48 bbls, 1569 ft.

OKLAHOMA WILDCATS

Oklahoma County—Failure: E. S. Youngblood's Swatek 1, nw sw 7-11n-4w, 2 Wx 8624 ft, abnd 8650 ft.

Payne County—Discovery: J. E. Crosbie's Wyatt 1, ne sw 25-19n-4e, Oswego 3030 ft, Prue zone 3140 ft, Verd 3240 ft, Miss 3604 ft, Wdf 3706 ft, Misener 3730-65 ft, Sylvan 3765 ft, Viola 3769 ft, perf 23 holes 3750-56 ft, flowed 225 bbls 1st 1½ hrs, flowed 418 in 2½ hrs, flow 300 bbls 13/64 in chk on tbg, 400,000 gas, 3776 ft.

Seminole County — Discovery: Fred Haddock's Davis & Patterson 1, sw sw ne 2-8n-7e, Booch 3224 ft, shot 40 qts, flow 150 bbls, 39.8-gr, 3224 ft.

WEST TEXAS

Andrews County—Fullerton: Fullerton Oil Co.'s Kendrick 1, c ne ne PSL 17, blk A-32, flow 992 bbls, 26/64-in, 16,000 gals acid, Clear Fork 6793-7295 ft.

Andrews County—Mascho: Belfort Oil Co.'s University-Cities Service 2-D, c ne nw sec 23, blk 10, flow 152 bbls, ⅜-in, shot 1260 qts 4290-4577 ft, td 4606 ft.

Cities Service's University 1-K, c nw sw sec 10, blk 10, pump 138 bbls, shot 330 qts 4498-4600 ft.

Skelly's University 1-N, c se nw sec 4, blk 10, pump 136 bbls, 3000 gals acid 4455-4620 ft.

Cochran County — Dean: Magnolia's Dean 2-C, 660 ft out ne cor lab 35, lge 92, Lipscomb CSL, pump 222 bbls, 4500 gals acid, shot 90 qts 4990-5040 ft, td 5057 ft.

Cochran County—Slaughter: A. A. A. Oil Corp.'s Boyd-Texaco 3, 4547 ft wel 3794 ft snl lge 53, Oldham CSL, flow 502 bbls, ½-in, 10,000 gals acid 5026-59 ft.

Bay Pet. Corp.'s Mallet-Humble 11, 580 ft out sw cor lab 19, lge 53, Scurry CSL, flow 646 bbls, 2-in, 10,500 gals acid 4970-5012 ft.

Devonian et al's Duggan 38-A, 510 ft out sw cor lab 5, lge 55, Oldham CSL, flow 1027 bbls, 2½-in, 12,000 gals acid 4985-5033 ft.

E. E. Fogelson et al's Duggan 4, 510 ft out nw cor lab 14, lge 55, Oldham CSL, flow 1060 bbls, 12,000 gals acid 5010-50 ft.

Texas Co.'s Mallet 14-F, 580 ft out sw cor lab 16, lge 51, Scurry CSL, flow 815 bbls oil, 2% bs&w, 9000 gals acid 4975-5012 ft.

Crane County—Sand Hills: Lario O&G Co.'s Tubb-Humble 2-D-a, c se ne PSL 8, blk B-32, flow 2429 bbls, ¾-in, 500 gals acid, perf 4320-4550 ft.

Ector County—Goldsmith: Stanolind & Atlantic's Scharbauer 2-W, PSL 13, blk A, flow 353 bbls oil, 3% wtr, 3000 gals acid 4153-75 ft.

Ector County—North Cowden: Texas Co.'s Holt 29, 1981 ft snl 675 ft ewl T&P 10, blk 43, T-1-N, flow 199 bbls, shot 400 qts 4500-4717 ft.

Gaines County—Wasson: Shell's Cox 2, 554 ft ewl 557 ft snl nw ne sec 380, blk G, CCSD&RGNG sur, elev 3540 ft, brown lime 3950 ft, San Andres 4400 ft, flow 452 bbls, ¾-in, 5000 gals acid 4910-52 ft.

Hockley County—Slaughter: Jerry Hawkins et al's Mallet 59-A, 580 ft out se cor lab 12, lge 47, Edwards CSL, flow 624 bbls, 12,000 gals acid 4918-97 ft.

Tevis Morrow et al's Mallet 55, 580 ft out ne cor lab 2, lge 48, Edwards CSL, flow 499 bbls, 10,000 gals acid 4880-4925 ft.

Tevis Morrow et al's Mallet 59, 580 ft out ne cor lab 1, lge 48, Edwards CSL, flow 479 bbls, 10,000 gals acid 4850-91 ft.

Howard County—Iatan-East Howard: Cosden Pet. Corp.'s Read 2, se nw nw T&P 48, blk 30, T-1-N, pump 149 bbls oil, 73 bbls wtr, shot 1120 qts 2730-2943 ft, td 2963 ft.

Pecos County—Apco: Bay Pet. Corp.'s Shearer-Humble 3, 660 ft fr nel 1760 ft fr sel H&GN 99, blk 10, flow 165 bbls, ¼-in, perf Ellenburger 4640-88 ft, td 4705 ft.

Ward County—Shipley: Jas. H. Snowden-L. H. Freedman's Wristen-Gulf 1-D, 330 ft fr sel and swl H&TC 2, blk 5, flow 102 bbls, ¼-in, 2467-83 ft.

Winkler County — Weiner: Ralph Lowe et al's Brown-Altman (Humble) 8, c nw nw PSL 24, blk B-5, flow 176 bbls, 1-in, 3020-50 ft.

Yoakum County—Waples-Platter (Ownby): Shell's Ownby 1, c nw ne sec 502, elev 3360 ft, pump 175 bbls oil, 12% bs&w, 4400 gals acid, perf 5250-5402 ft, td 5582 ft.

WEST TEXAS WELLS DEEPENED

Upton County—McCamey: Sinclair Prairie's Lane 3, 330 ft out nw cor lse, GS&SF sec 5, otd 2075 ft, pump 72 bbls oil, 2½% bs&w, lime 1960-2095 ft.

Upton County—McCamey Field New Pay: T. P. Coal & Oil Co.'s Lane 52-A, sw ne se GC&SF 5, A-213, otd 2151 ft, elev 2589 ft, Wolfcamp 5832 ft, Permian-Devonian contact 6450 ft, base chert 7065 ft, Silurian 7115 ft, Montoya 7201 ft, Simpson 7285 ft, Ellenburger 8195 ft, flow 398 bbls 44-gr, ratio 1732/1, 2-in choke, 12,000 gals acid, Siluran perf 7125-7200 ft, td 8358 ft.

WEST TEXAS WILDCATS

Hockley County—Failure: Brown & Wheeler's French 1, 660 ft out sw cor lab 22, lge 74, Haskell CSL, elev 3589 ft, Yates 2530 ft, brown lime 3370 ft, San Andres 3670 ft, San Angelo 5010 ft, abnd 6500 ft.

Sterling County — Failure: Phillips' Glass-Sterling 1, c nw ne T&P 3, blk 31, T-5-S, elev 2468 ft, Ellenburger 9265 ft, abnd 9303 ft.

WEST CENTRAL TEXAS

Coleman County—Coker: H. T. Owen and H. H. Adams' Coker 4, 660 ft out ne cor se GH&H Ry. 72, blk 2, flow 76 bbls, 20/64-in, shot 70 qts 3462-92 ft, td 3609 ft, pb 3492 ft.

Comanche County: L. H. Choate et al's Johnson 3, 633 ft snl 200 ft ewl s½ sw¼ R. T. Ry. 2, pump 9 bbls, sand 701-38 ft.

Jones County—Wimberly: Maracaibo Oil Explo. Corp.'s Butler 2, 550 ft snl 330 ft ewl subdiv 5, G. W. Winters sur 39, abnd 2649 ft.

Shackelford County: Kittery Oil Co.'s Clausell 1, 50 ft fr nel 1163 ft fr sel sec 587, TE&L Co. sur, abnd 775 ft.

Stephens County: Ledge Pet. Co.'s Black 1-B, 660 ft out sw cor se, sec 1138, TE&L Co. sur, elev 1159 ft, pump 41 bbls, 7000 gals acid Bend 3278-86 ft, td 3328 ft.

WEST CENTRAL TEXAS WELLS DEEPENED

Stephens County: T. P. Coal & Oil Co.'s Binney 54, 1650 ft snl 2600 ft ewl T&P 57, blk 4, otd 1750 ft, abnd 1985 ft.

Taylor County—Reddin Pool: Butler-Horne Dr. Co. et al's Hudson 2, 519 ft snl 780 ft ewl lot 3, J. A. Nabors sur 9, otd 2239 ft, dual completion, flow 1600 bbls, ¾-in, 1000 gals acid 2463-2503 ft, td 2520 ft.

WEST CENTRAL TEXAS WILDCAT

Taylor County—Failure: B. & W. Oil Co.'s Norwood 1, c nw ne sec 59, Blind Asylum Lands, elev 1746 ft, abnd 3600 ft.

SOUTHWEST TEXAS

Duval County—South Kohler: Ogden & Voyles' Richardson 3, 2140 ft fr s'ly nl & 1650 ft fr w'ly wl GB&CNG sur 3, 2220-ac tr, temp abnd 1844 ft.

Duval County—Sweden: Hiawatha Oil & Gas Co.'s Herberger 7, 466 ft fr sl 1923-ac lse Santos Flores Gr, abnd 6003 ft.

Starr County—East: Sun's East 4-D, 5300 ft fr most w'ly wl & 2980 ft fr most s'ly sl, 4480-ac lse, Santo Domingo de Arriba Gr., 5½-in 5717 ft, 95 bbls, 9/64-in, td 4730 ft.

Starr County—Cameron: Continental's Cameron 3, 989 ft fr wl & 1645 ft fr sl, George W. Smith sur 138, 6-in 4798 ft, perf 4135-38 ft, ⅝ow 168 bbls, 3/16-in, td 4798 ft.

Starr County—North Sun: Sun's Montalvo 2-B, 1500 ft fr el & 2830 ft r nl 1156-ac lse, Los Retachez Gr, sw flank, 5½-in 5900 ft, perf 5852-59 ft, flow 4 bbls, ¼-in, td 5959 ft.

SOUTHWEST TEXAS WILDCATS

Duval County—Failure: G. W. Strake's Lowe 1, 960-ac lse BS&F sur 465, 3 mi e Labbe field, abnd 3511 ft.

Starr County—Failure: T. E. Stephens' Gonzales 1, 760 ft fr wl & 400 ft fr nl share 232, por 69, 11 mi nw Roma, 5½-in 4617 ft, temp abnd 5379 ft.

Webb County—Failure: Hickok & Reynolds' Perez 1, 629-ac tr, Severiano Perez sur 460, abnd 2716 ft.

SOUTH CENTRAL TEXAS

Bastrop County—North Dale (Bateman): Ralph R. Ogden's Riddle 2, 660 ft fr se & 680 ft fr nel 94-ac tr, Joshua Gray sur, 5½-in 2188 ft, pump 120 bbls, td 2220 ft.

SOUTH CENTRAL TEXAS WILDCATS

Gonzales County—Failure: Amerada & Alder Oil Co.'s Morgan & Kunetka 1, 1490 ft fr ne & 2690 ft fr sel, S. B. Conley sur, abnd 6732 ft.

Travis County—Failure: F. M. Ginther's Berry 1, 280-ac lse, Jose Antonio Navarro sur, 5½ mi ne Elroy, abnd 1492 ft.

Wilson County—Failure: H. A. Rice's Scull 1, 3 mi e Lavernia, 1935-ac lse, Manuel Ximinez sur 8, abnd 2909 ft.

LOWER TEXAS COAST

Jackson County — West Ranch: Humble's Toney 6-B, 2754 ft nw alg nel 495-ac tr B lse fr e cor (w bank Lavaca river), thence 2504 ft sw at ra to lcn, ne flank, 5½-in 5718 ft, perf 5538-55 ft, flow 361 bbls, ¼-in, td 5718 ft.

Magnolia's West Ranch 260-A, 1490 ft sw

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Menefee Bayou 11, 582-ac tr, Ramon Musquez Gr, 5½-in 5585 ft, perf 5550-78 ft, flow 48,600,000 gas, td 5585 ft.

Jim Wells County—Seeligson: Sun's Canales 23, 1980 ft fr wl and 4465 ft fr nl, J. E. Stevens sur 364, 5½-in 6093 ft, perf 5996-6004 ft, flow 168 bbls, 7/64-in, td 6099 ft.

Transwestern's Wilkening 1, 330 ft fr s&el 40-ac lse, R. P. Haldeman subdvn, Seeligson Rch, dual completion, 5½-in 6161 ft, perf 5236-41 ft, flow 96 bbls 9/64-in, perf 6038-41 ft, flow 140 bbls, ½-in, td 6250 ft.

Karnes County—Porter: Magnolia's Shelton 3, 2518 ft fr nel and 581 ft fr sel 220-ac lse, Victor Blanco Gr A-3, 5½-in 3982 ft, perf 3926-34 ft, flow 45 bbls, ¼-in, td 3989 ft.

Magnolia's Shelton 4, 1380 ft fr se and 680 ft fr nwl and 1180 ft e fr w cor 200-ac tr, Victor Blanco sur, 5½-in 4008 ft, perf 3960-64 t, flow 9 bbls, ⅛-in, td 4009 ft.

Nueces County — Agua Dulce: Richardson Petroleum's Union Central Life 1-B, 491 ft fr s and 475 ft fr el sec 304, Palo Alto Gr, 5½-in 7117 ft, perf 7101-06 ft, flow 122 bbls, ⅛-in, td 7117 ft.

LOWER TEXAS COAST EXTENSION

Jackson County—Mayo: Humble's Branch 9, 660 ft fr n&el, C. Culina sur 14, 1809-ac lse, ½-mi sw prodn, 5½-in 5516 ft, perf 5402-10 ft, flow 149 bbls, ⅛-in, td 6502 ft.

LOWER TEXAS COAST WILDCATS

Bee County—Failure: Cox & Hamon's Beedy 1, 110-ac lse, J. M. Keating sur, 2 mi ne Blanconia field, abnd 5352 ft.

Brooks County—Failure: Southern Minerals' Frank 1, lot 1, blk 1, Los Olmos y Loma Blanca Gr, abnd 7807 ft.

Sun's Boedeker-State 2-A, 592-ac tr CCSD &RGNG sur 10, abnd 7805 ft.

Willacy County—Failure: Baldridge & King & Nichols' Lincoln 1, share 3, San Juan de Carricitos Gr, 613-ac lse, abnd 8514 ft.

TEXAS GULF COAST

Brazoria County—Old Ocean: Magnolia & J. S. Abercrombie's Wilson-Oudt Unit 1, 80-ac tr, M. B. Nuckols sur, dual completion, set 7-in 10,910 ft, perf 10,005-35 ft, flow 350 bbls, ¼in; perf 10,110-135 ft, flow 506 bbls, ¼-in, td 10,910 ft.

Fort Bend County—Blue Ridge: Windsor Oil Co.'s Blakely 1, ne flank, 35-ac tr, Edward Drew sur, lot 7, sec G, abnd 5266 ft.

Galveston County—Alta Loma: Stanolind's Hulen 9, 497 ft fr el & 800 ft fr nl 40-ac tr, Asa Brigham sur, 7-in 9100 ft, perf 9181-83 ft, flow 24 bbls oil, 73 bbls salt water, 3/64-in, td 9184 ft.

Hardin County—Sour Lake: Earl C. Hankamer's McLean 1-B, 10-ac lse, Stephen Jackson sur, sand 2315 ft, flow 162 bbls, ¼-in, td 2360 ft.

Matagorda County—North Markham: Sun's Braman 8, 3591 ft fr swl & 4620 ft fr nwl 40-ac lse, Hosea H. Lge, east of prodn, 5½-in 8100 ft, perf 7710-25 ft, flow 345 bbls, 12/64-in, td 8100 ft.

Montgomery County—Lake Creek: Superior Oil Co.'s McWhorter 2-C, 475 ft n & 2955 ft w of nw cor, C. Damuth lse, triple completion, 7⅝-in 10,280 ft, perf 9790-9810 ft, flow 258 bbls, ¼-in; perf 9988-10,000 ft, flow 306 bbls, ¼-in; "D" sand 10,282-10,302 ft, no perfs, flow 420 bbls, ¼-in, td 10,302 ft.

Wharton County—Boling: Pan American's Gary 1, sw flank Boling, 830-ac tr, S. F. Austin sur, abnd 6065 ft.

TEXAS GULF COAST WILDCATS

Chambers County — Failure: Standard of Texas' State-Bay 1, lse 105, 1½mi offshore at Smith Point, abnd 8875 ft.

Colorado County—Failure: Charles E. Fraser's Tracy 1, 163-ac tr, sec 13, I&GN sur, 5 mi nw Garwood, abnd 6860 ft.

Harris County—Failure: Ludeau Oil Co.'s Ledeau 1, 40-ac tr, tract 63, Cragil & Parkhill subdvn, 9 mi n Houston, abnd 4464 ft.

Matagorda County—Failure: Sun's Strnadel 1, 4 mi sw Midfield, se cor I&GN sur, sec 7, blk 6, abnd 10,849 ft.

Matagorda County — Failure: Texas Co.'s Hamill 2, 9 mi s Sargent, 11,082-ac lse, William Baxter sur, abnd 6745 ft.

Polk County—Failure: Humble's Carter 3-B, nw flank Segno field, 1766-ac tr, abnd 10,176 ft.

EAST TEXAS

Anderson County—Cayuga Deep: Roeser-Pendleton's Billett 6-B, 2443 ft nsl 577 ft wel, Michael Ellis sur, elev 267 ft, Georgetown 4758 ft, anhydrite 7030-40 ft, flow 2,500,000 gas, 115 bbls distillate, 5/16-in, 5000 gals acid Rodessa 7380-7516 ft, td 7677 ft.

Wood County—Quitman: Magnolia's White 1, 467 ft out se cor 87.74-ac tr, S. Calderson sur, Pecan 3543-73 ft, Austin faulted out, Georgetown 5170 ft, Paluxy series 6373 ft, water sand 6390 ft, abnd 6424 ft.

Shell's Johnson 1, 1550 ft ewl 660 ft snl, Joshua Robbins sur, elev 436 ft, Georgetown 4998 ft, Ft. Worth 5678 ft, Goodland 6192-6262 ft, Paluxy 6262 ft, water 6350 ft, flow 631 bbls, ¼-in, perf 6270-6320 ft, td 6460 ft.

Shell and Sun's Harris-McCreight 1, 2000 ft ewl 2650 ft nsl, E. Goodsir sur, elev 414 ft, Georgetown 5133 ft, Ft. Worth 5512 ft, Goodland 6004-68 ft, Paluxy pay 6084 ft, 1st Glen Rose 6426 ft, flow 581 bbls, ¼-in, perf 6082-6287 ft, td 6481 ft.

EAST TEXAS WATER INPUT WELL

Titus County—Talco: Humble's Clark-Humble 1-S, 3150 ft snl 348 ft ewl, Ada Rhinehart sur, perf Paluxy 4369-88 ft, td 5025 ft.

EAST TEXAS WILDCATS

Anderson County—Failure: C. Ed. Hyde-Pete Wiggins-Continental's Landis 1, 330 ft fr nel 330 ft nw of sel of s½ S. Landis sur, Pecan 3063 ft, Woodbine 5023 ft, abnd 5225 ft.

Henderson County—Failure: B. F. Phillips et al's Welch 1, 934 ft ewl 5000 ft nsl, Isaac Greeson sur, elev 284 ft, Austin chalk 3118-3510 ft, abnd 4107 ft.

Hunt County—Failure: Humble's Rutherford 1, 2300 ft wel 1980 ft snl, Samuel Lindsey sur, elev 540 ft, Woodbine 2117 ft, Georgetown 2833 ft, Paluxy 3996 ft, massive anhydrite 4417-4525 ft, Travis Peak 4993 ft, Cotton Valley 5833 ft, Buckner 6992 ft, Smackover 7172 ft, Schist 7466 ft, abnd 7483 ft.

Leon County—Failure: Carter-Gragg Oil Co. et al's Richmond-Humble 1, 2750 ft sw of nel 2450 ft se of nwl, Wm. McMillan sur, elev 318 ft, Pecan 4038-4232 ft, Austin 5227-5489 ft, Woodbine 5824 ft, abnd 5902 ft.

TEXAS PANHANDLE

Gray County: Texas Co.'s W. Benedict 9, 330 ft ewl 499 ft snl se¼ H&GN 55, blk B-2, pump 168 bbls, shot 460 qts 2900-88 ft.

Hutchinson County: Danube Oil Corp.'s Sanford-Gulf 15-A, se nw nw H&TC 78, blk 46, pump 182 bbls, 1500 gals acid 2844-55 ft, td 2865 ft.

Shamrock's McNutt 1, c se se T.C. Ry. 17, blk M-27, pump 42 bbls, 1000 gals acid, shot 80 qts 3198-3212 ft, td 3220 ft.

Skelly and Cabot Carbon Co.'s Herring 13-A, 4966 ft snl 2862 ft ewl of e-3011 ac, E. Almaguie sur, pump 90 bbls, 1000 gals acid 3065-3100 ft.

Sinclair Prairie's Weatherly 19-A, 1980 ft snl 1830 ft ewl A&B sec 23, blk Y, pump 70 bbls, 1500 gals acid 3090-3122 ft.

NORTH TEXAS

Archer County: M. W. Blair Oil Co.'s Henry 2, 450 ft snl 2840 ft wel sec 35, blk 5, Clark-Plumb sur, abnd 1151 ft.

Clay County: Kouri & Morgan's Cheeves 5, 2700 ft nsl 1500 ft wel blk 55, Bacon sur, pump 25 bbls, 1125-33 ft.

Perkins-Cullum's Taylor 21-A, 580 ft nsl 7 ft wel blk 44, Bacon sur, pump 18 bbls, 1063-70 ft.

Perkins-Cullum's Taylor 22-A, 762 ft wel 745 ft nsl blk 44, Bacon sur, abnd 1317 ft.

Sussex Oil Corp.'s Glascow 38, 150 ft fr swl 565 ft fr nwl blk 34, Bacon sur, pump 98 bbls, 1061-75 ft.

Texas Co.'s Hansard 11, 3850 ft fr nwl 150 ft fr swl lot 1, Thornberry-F. Longario sur A-286, pump 40 bbls, 1100-06 ft.

Wilder Drlg. Co.'s Taylor 6, 560 ft fr nel 4200 ft fr sel blk 41, Bacon sur, pump 57 bbls, 1063-75 ft.

Jack County: Chas. H. Kadane et al's Carter-Shell 20, 230 ft nsl 1480 ft wel TE&L sec 3312, abnd 283 ft.

Montague County — Hildreth: Continental's Gadberry 1-A, 330 ft out ne cor, e½ nw E.T. Ry. sec 55, top Bend 6128 ft, flow 1262 bbls 32/64-in, natural, perf Bend conglomerate 6167-6205 ft, td 6495 ft.

Continental's Steed 1, 330 ft out nw cor s½ nw E.T. Ry. sec 56, Bend 6050 ft, flow 1349 bbls, ½-in, perf 6124-73 ft, td 6411 ft.

Sinclair Prairie's Middleton 2, 625 ft nsl 2950 ft ewl E.T. Ry. sec 53, Bend 5985 ft, Simpson sand 7184 ft, Viola 6543 ft, flow 2422 bbls 2-in, perf 6016-66 ft, td 7194 ft.

Throckmorton County: M. A. Grisham et al's Kelley 3, 150 ft fr sel 1614 ft fr nel sec 27, C.I.R. sur, pump 33 bbls, 716-30 ft, td 733 ft.

Humble's Matthews 2, 660 ft out ne cor sec 55, C.I.R. sur, Bend 4188 ft, Mississippi 4574 ft, Ellenburger 4898 ft, abnd 5314 ft.

Owenwood Pool No. 3 Co.'s Howsley-McCord 1, 150 ft snl 1300 ft wel sec 28, C.I.R. sur, pump 23 bbls, 687-707 ft.

Wichita County: Texas Co.'s Waggoner Est. 442-A, 2147 ft fr nl 1869 ft fr wl GC&SF sec 20, but in T.C. Ry. sec 2, pump 16 bbls, shot 5 qts 536-42 ft.

F. H. Gohlke et al's Bilbrey 2-A, 700 ft fr sw 600 ft snl lot 11, Pratt subdiv, abnd 1237 ft.

Wichita County—K-M-A: Grace & Grace's Wichita Co. Water Dist. 1, 6990 ft snl 300 ft ewl sec 29, HT&B sur A-128, top lime 3885 ft, abnd 4116 ft.

Wilbarger County: Consolidated-W. T. Waggoner Est.'s Fee 8-GG, 3276 ft nsl 2610 ft wel H&TC 36, blk 6, Ellenburger 4351 ft, pump 150 bbls, 1000 gals acid, perf Strawn 3962-84 ft, td 4415 ft.

W. T. Waggoner Est.'s Fee 9-GG, 3276 ft nsl 3930 ft wel H&TC 36, blk 6, pump 200 bbls, 2000 gals acid 4024-26½ ft.

Young County: Allar-Panhandle et al's Allar-Hunt 11, 2200 ft snl 1450 ft ewl of s-1185 ac of TE&L sec 3409, flow 180 bbls, ¼-in, 2733-45 ft.

Young County: Farmer & Hansen's Laird 9, 600 ft nsl 900 ft ewl of 163-ac tr, TE&L sec 3401, abnd 911 ft.

NORTH TEXAS WELLS DEEPENED

Montague County: Continental's Lawler 1, 150 ft nsl 997 ft ewl 100-ac tr, T. Leftwich sur A-434, otd 1800 ft, pump 3 bbls, perf 2031-36 t, td 2223 ft.

Wichita County: Magnolia's B. Schlegel 9, otd 1198 ft, abnd 1444 ft.

NORTH TEXAS WILDCATS

Archer County—Failure: S. F. Hutcherson et al's Linderman 1, 1000 ft out sw cor sec 41, blk 4, Clark-Plumb sur, abnd 1067 ft.

Cooke County — Discovery: E. R. Perkins-W. R. Bourland-Phillips' Danglemyer 1, 1600 ft snl 4600 ft wel, Eleanor Langford sur A-566, Ellenburger 2173 ft, flow 818 bbls 37.4-gr, ¾-in, 200 gals acid, td 2178-81 ft.

Cooke County—Failure: Bridwell Oil Co.'s Campbell 1-A, 2776 ft nsl 660 ft wel, O. F. Leverett sur A-607, abnd 1525 ft.

Jack County—Failure: Billy Bridewell et al's McClure 1, 330 ft out nw cor, T. L. Wales sur A-1014, Buttram 1893 ft, abnd 2202 ft.

Haskell County—Failure: Humble's Berry 1, 5018 ft nsl 660 ft wel sec 37, B. F. Woods sur A-403, Coleman Jt 815 ft, Dothan 1252 ft, top lime 3284 ft, abnd 3292 ft.

Young County—Failure: S. H. Fagadau et al's Doyle 1, 1630 ft nsl 1000 ft wel sec 184, TE&L sur, abnd 1103 ft.

Young County—Murray Pool New Pay: Anderson-Prichard Oil Corp.'s Myers-Walsh 1, 1061 ft snl 1500 ft wel, J. W. Walsh sur A-1553, Bend 3664 ft, Marble Falls 4248 ft, Ellenburger 4772 ft, flow 2224 bbls 42.5-gr, 790/1, ¾-in, perf Marble Falls 4254-59 ft, td 4858 ft.

Young County — New Pay for Un-named Pool: Anderson-Prichard Oil Corp.-Col-Tex Ref. Co.'s Donnell 2, 2761 ft e 4488 ft n of m/n/sw cor 1046-lse, M. Edmonds sur A-91, Barnett 4404 ft, Mississippi 4665 ft, flow 220 bbls 38-gr oil, 88 bbls wtr, ½-in, 1000 gals acid, Bend perfs 3582-90 ft, td 4802 ft.

WYOMING

Natrona County—Cole Creek: General Petroleum Corp.'s Gov't 62, se nw ne 21-35n-77w, flow 185 bbls, 5¾-in 8002 ft, Lakota 8005 ft, td 8027 ft.

Park County—Elk Basin: MacKinnie Oil & Drilling Co.'s Sullivan 1, ne se sw 31-58n-99w, flow 90 bbls, Tensleep 5103-5218 ft.

Park County—Frannie: Continental Oil Co.'s Northern Pacific 7, se nw se 23-58n-98w, swab 10 bbls, Tensleep 3160-3244 ft.

Sweetwater County—Baxter Basin: Mountain Fuel Supply Co.'s Unit 1, ne sw ne 2-16n-104w, 5,000,000 gas, Dakota sand 2850-2960 ft, td 7172 ft, pb 2960 ft.

Mountain Fuel Supply Co.'s Hetzler 1, nw nw 8-18n-103w, 8,000,000 gas, Frontier sand 2667 ft.

United States Wildcat Starts

CALIFORNIA

Los Angeles County: J. Paul Getty's Westmore 1, 1390 ft, n 1430 ft w c/l Imperial Highway and Western Ave, Athens area, lcn.

Santa Barbara County: Continental's Davis 1, se sw sw 28-10-34, Santa Maria Valley area, lcn.

Tulare County: Richfield's Terra Bella Hastings 1, se se sw 28-22-27, Terra Bella area, sp.

Ventura County: Los Nietos Co.'s Elkins 2-1, se se ne 5-3-17, Shields Canyon area, lcn.

ILLINOIS

Franklin County: George Allison et al's C. E. Shirley 1, ne ne ne 29-5s-3e, lcn.

Aetna Oil Co. et al's U. S. Coal & Coke Co. 1, se se nw 8-6s-4e, lcn.

Hamilton County: Phillips' Federal Coke Co. 1, se se nw 8-7s-6e, lcn.

Jefferson County: E. M. Self et al's Jeff O&G Co. 2, sw ne ne 32-3s-2e, lcn.

Madison County: R. Livermore's Bassett 1, nw ne nw 23-6n-9w, dr.

Marion County: Jarvis & Marcell's Gabriel 1, nw nw se 28-3n-3e, dr.

St. Clair County: G. A. Morris' Albert 1, sw nw nw 16-1s-9w, dr.

Washington County: R. O. Tagerson's Shubert 1, sw nw nw 18-3s-4w, lcn.

Wayne County: Felix Jablonski's Yorndorf 1, nw nw 3-1n-9e, dr.

INDIANA

Gibson County: George W. Boyce's State of Indiana 1, se nw ne 23-3s-14w, lcn.

Phillips' Pons 1, ne ne nw 31-3s-10w, dr.

Posey County: Sells Pet. Co.'s Rutledge 1, w½ sw ne 14-5s-14w, lcn.

NORTH LOUISIANA

Caddo Parish: Ohio Oil Co.'s R. W. Williams 1, 755n 2010w of se cor 3-22n-15w, lcn.

Desoto Parish: Superior's Mansfield Hard-

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TRADING POST SECTION
(Page 64 of This Issue)

wood Lumber Co. 1, 685n 520e of sw cor 2-11n-10w, lcn.

DeSoto Parish: W. Brush's Peek 1, 770s 1875w of ne cor 25-11n-13w, lcn.

KENTUCKY

Butler County: L. L. Dougherty's Carl Hunt 1, 7-H-32, dr.

Hancock County: Ky. Nat. Gas Co.'s R. Gist 1, 17-P-33, lcn.

Webster County: Sohio's J. H. Williams 1, 25-M-25, lcn.

MICHIGAN

Barry County: Sun's Bowler 1, ne nw nw 27-4n-8w, lcn.

Huron County: Sinclair Wyoming Oil Co.'s Rink 1, ne sw nw 24-17n-14e, mim.

Osceola County: Sun's Lakie 1, s½ se se 9-18n-9w, rig.

Sun's Davy D-1, s½ sw se 36-17n-8w, lcn.

Gordon Oil Co.'s Strong 1, s½ sw sw 30-19n-10w, rig.

Tuscola County: Gulf's Lassiter 1, ne sw se 5-13n-9e, rig.

Van Buren County: S. L. McCall's Nelson 1, se se nw 29-1s-15w, lcn.

S. L. McCall's Jennings 1, sw sw ne 12-1s-16w, rig.

OKLAHOMA

Hughes County: Otha H. Grimes' Haney 1, ne ne ne 1-8n-10e, rig.

Kay County: Amerada's Burke 1, nw ne se 31-25n-2w, lcn.

Oklahoma County: Jordan Pet. Co.'s Borodar 1, c se ne 14-14n-1w, 300 ft, woc.

Osage County: Champlin's Osage 1, sw sw ne 1-23n-3e, rur.

Pottawatomie County: Burns Oil Co.'s Lynn 1, ne se nw 28-6n-4e, Belle City 1140 ft, checkerboard 1730 ft, dr 2563 ft.

EAST TEXAS

Bowie County: Barnsdall Oil Co.'s Louis Heilborn 1, 7500 ft wel 550 ft nsl, M. H. Jones sur, lcn 7500-ft test.

Fannin County: Texas Mineral Land Co.'s Wharton 1, 2500 ft nsl 1060 ft wel, Wm. M. Rice sur, dr 1615 ft.

Henderson County: L. O. McMillan et al's H. C. Gross 1, 330 ft snl 1320 ft wel 80-ac tr, R. P. Pate sur, sp on Woodbine test.

Hunt County: Humble's L. Normon 1, 670 ft out nw cor tr, Hiram Thompson sur, 5 mi nw Greenville, mim for Smackover test.

LOWER TEXAS COAST

Bee County: Bridwell Oil Co.'s Huddleston 1, 4 mi e Beeville, 540-ac tr, Anna Burke sur, lcn 4500-ft test.

Siosi Petroleum Co.'s Handy 1, 925-ac tr, James O'Reilly sur, 4 mi ne Skidmore, lcn.

H. B. Zachry Co.'s Brown 1, 40-ac tr out of sw end nw portion 451-ac tr, T. J. Butler sur, lcn 4000-ft Pettus test.

H. B. Zachry Co. and Superior Oil Corp.'s Copeland & Carroll 1, 350-ac tr, John Pace sur, lcn.

DeWitt County: Butcher-Arthur's Kolodziejczyk 1, w 40-ac of e 80-ac of 162-ac Jose Santos Gr, lcn 8000-ft Wilcox test.

Jackson County: W. Stewart Boyle's Hutcheson 1, 71-ac lse, Nestor Clay sur, 6 mi sw Ganado, lcn.

W. Stewart Boyle & John G. Mayo's Lorenson 1, El Toro area, sec 1, C. W. Hahl subdvn D. H. Burn Rch, J. J. Linn sur, 343-ac tr, lcn 6800-ft Frio test.

Live Oak County: Charles E. Fraser's Atkinson 1, 918-ac tr, Louis Ayers sur 3, lcn 7000-ft Wilcox test.

Refugio County: Hewitt & Dougherty's Hynes 1, 2 mi nw Refugio, nw cor Manuel Arocha Gr, lcn 6500-ft test.

San Patricio County: Continental's McNeil 1, 1000-ac blk, 5½ mi sw Sinton, sec 31, Cubage & Miller subdvn, mim.

SOUTHWEST TEXAS

Duval County: Gordon W. Johnson's Adami 1, 181-ac tr, Arnold & Bennett sur 47, lcn 1350-ft test.

McMullen County: Edwin M. Jones' Ezzell 103, sec 39, Ezzell Ranch, 10 mi sw Simmons City, lcn 3500-ft test.

Edwin M. Jones' Ezzell 104, nw¼ sec 38, Ezzell Ranch, 2 mi sw Ezzell 103 lcn 3500-ft test.

NORTH TEXAS

Archer County: Shell's J. H. Rovertson 1, 1675 ft snl 2015 ft ewl, J. Dorsey sur A-121, lcn 5500-ft Ellenburger test.

A. R. Dillard et al's Wilson-McCory 1-T-A, 660 ft wel 710 ft snl ATNCL sec 111, lcn 1600-ft test.

Valley Osage Oil Co.'s Turbeville 1, 1320 ft snl 200 ft ewl blk 28, Jefferson CSL sur, lcn 1150-ft test.

White & Duncan's Kinder 1-57, 800 ft snl 300 ft ewl sec 57, blk 5, Clark-Plumb sur, lcn 1000-ft test.

Jack County: L. T. Burns et al's Lacy Bowen-Gulf 1, 1500 ft snl 4663 ft wel, Rebevva Parker sur A-461, lcn 6250-ft Ellenburger test.

Shell's O. J. Carter 1-A, 519 ft nsl 990 ft ewl of 257.28-ac tr, McKinney-Williams sur A-435, lcn 5650-ft Ellenburger test.

Montague County: S. D. Johnson and Alco Valve Co.'s S. D. Howard 1, 467 ft fr nwl 4576 ft fr swl Guadalupe College sur, lcn 6500-ft test.

Young County: Anderson-Prichard Oil Corp.'s J. W. Cloud 1, 660 ft out sw cor Thomas Antoney sur A-1716, lcn 3700-ft test.

WEST TEXAS

Crane County: Gulf's W. A. Estes 2, 1986 ft wel 1998 ft nsl PSL 8, blk B-28, lcn Ellenburger test.

Hockley County: Stanolind's Tom Cobb 1, 660 ft out se cor lab 103-E, lge 75, Haskell CSL sur, lcn 6500-ft Clear Fork test.

Lamb County: **Eugene** Constantin et al's Effie Ray 1, 440 ft out se cor lab 8, lge 680, State Capitol Lands, lcn 5000-ft test.

Pecos County: G. C. H. Co.'s H. K. Kinde, Jr., 1, ne ne nw GC&SF 13, blk 194, lcn 2000-ft test.

Humble's H. O. Word 1, 3120 ft ewl 2169 ft fr m/n/n line, T.C. Ry. 4, blk 5, lcn 7500-ft test.

WEST CENTRAL TEXAS

Callahan County: H. G. Daniels Jr. et al's Sarah C. Hennessey 1, 440 ft snl 330 ft wel S.P. Ry. sec 1, lcn 2100-ft test.

Coleman County: H. F. Wilcox O&G Co-E. J. Cunningham's J. W. Roberts 1, 330 ft out ne cor nw¼, G. H. Gibbs sur 154, lcn 2300-ft test.

Shackelford County: C. D. Neff et al's J. H. Grimes 1, c sw ne T&P 82, blk 12, lcn 1500-ft test.

Stephens County: Shell's O. E. Allen 1, 495 ft out se cor S. P. Ry. 14, blk 2, lcn Ellenburger test.

C. O. Terrell et al's Riddle Hrs. 1, sw sw sw T&P 46, blk 6, lcn 2100-ft test.

WYOMING

Fremont County: Stanolind Oil & Gas Co.'s Shoshone-Arapahoe, sw se sw 18 - 2n - 1w, Winkleman dome, rig.

Hot Springs County: Minnelusa & Kerlyn Oil Co.'s Unit 1, c ne se 12-45n-97w, Golden Eagle structure, rotary.

Broderick & Gordon's E. J. Christensen 1, cnl ne se 6-44n-98w, Wagonhound district, sp.

Letters to the Editor

DEAR SIR:

I have been in the oil business 25 years, during which time I have operated an average of more than 50 wells, which is perhaps a fair showing for an independent operator, but after reading the first two articles on Page 7 of your issue of November 15, I have decided to quit.

The alphabet of the English language was not hard for me to learn, but the alphabet of the New Deal with its PAW, WPB, and all the unnecessary regulations imposed by this misuse of the alphabet has developed so many unnecessary regulations that a man must choose between claiming the right of free men or of being a slave to irresponsible bureaucrats. For my part I have chosen to remain free, even if I must give up the most fascinating business to which any man ever gave 25 years of his life. It is disheartening for those of us who love the oil industry to be compelled on bended knees to beg for the right to produce oil, and that at this time when victory depends on our success. If this country has not already gone to hell under the New Deal, it is only because there may be enough strong Americans left to salvage the wreckage of our once glorious land of free enterprise.

In my judgment the alphabetical agencies which are now destroying the oil business are bent upon accomplishing that very purpose, along with the regimentation of all other business.

An emancipation proclamation for American industry, the white slaves of today, would be more appropriate now than Lincoln's proclamation which long ago freed the black slaves.

I do not believe there are enough brains in the New Deal to produce oil profitably at $10.00 per barrel, and I do not see why those of us who have sense enough to produce oil for $1.00 per barrel should continue to do so under a condition of bureaucratic slavery wherein business executives are created by political appointment.

I have 1000 acres of oil-producing

properties and several thousand acres of well defined structures which I have long planned to drill, but I am closing my books now and shall keep them closed until this country throws off its present damnable bureaucratic system of industrial oppression.

We have several fronts in foreign lands right now, but we are going to have another front at home before long—and this may prove to be the most important front of them all.

If the oil producers of this country would shut down until they could go to supply stores and get what they need without having to fill out a washtub full of reports to buy a cupful of supplies, the meddlesome Washington bureaucracy would be whipped in a week. Whenever that move starts, I will get back into the oil business for the privilege of sharing in a movement to restore freedom of enterprise and bring back to my country the American way of life and liberty.

ALEXANDER BOYNTON

San Antonio, Texas.

Squeaks from the Bull Wheel

Sounds Right

"Who," inquired the deaf old man of the minister, "was the stranger who took up the collection today?"

"That was our new deacon."

"New Dealer you say?"

"No; deacon. He is the son of a bishop."

"Yes, all of them are!"

Sergeant-Rookie Variation

The sergeant spoke his piece on the shoes the rookie wore to assembly. The rookie explained that he had worn them in private life.

"So what? Did you have a high silk hat when you were a civilian, too?"

"Why, yes, Sergeant, I did."

"Then why don't you wear that here, too?"

"Don't be silly. Who ever heard of wearing a top hat with brown shoes?"

We've Heard One

In the negro church the voice of the new soprano rose shrill and high above the organ and the voices of the congregation. The effect was something like the blast of a factory whistle in the midst of a swarm of gently humming bees.

After the services two members of the choir met to discuss the new singer.

"Whut does yo' think about Mandy Culpeppah's singin'?"

"Ah declare fo' goodness, I do believe that woman has got de most selfish voice I has evah heard."

Not So Gallant

A young Boston attorney had occasion to perform some slight legal service for a certain rich but not very attractive widow, and proceeded to render her a frightfully large bill.

The following day his client called on him and asked if he had been serious in his proposal.

"Proposal!" gasped the attorney. "But I haven't proposed."

"What!" exclaimed the widow. "You have asked me for my fortune, and have not the decency to take me along with it!"

The following day she received a bill which had been much revised—downward!

Never Mind the Weather

"You'll really marry me, darling?" exclaimed the enraptured young man. He proceeded: "And when we are married, the dark clouds will roll away, the sky will—"

"Don't make it a weather forecast—kiss me."

Almost A.W.O.L.

A group of soldiers were relating their experience on Guadalcanal, each trying to outdo the others in expressing his early fears.

"The way I dug my foxhole," said one, "was something to see. Each time a shell burst, I dug deeper and deeper into that hole. Finally, I heard a voice above me. It was my lieutenant yelling down:

"'Thompson, Thompson! If you dig two inches deeper, I am going to charge you with desertion!'"

At Long Last

It happened during the rush for gasoline ration coupons, and the scene was an American high school. The white-haired teacher at the table looked up and grinned at the man standing before her, application in hand.

"Well," she said, "after all these years, I'm finally able to give you an 'A'!"

PAW Form 35

(10-43)

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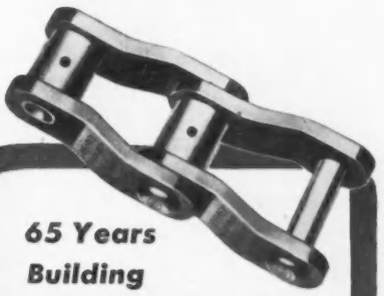

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Notes for the Equipment Buyer and User

Protected Motor

CENTURY ELECTRIC COMPANY

Century Electric Company, 1806 Pine Street, St. Louis 3, Missouri, has developed the Century, Form J, general purpose, open-rated motor in a new protected design, available in sizes from 1½ to 15 horsepower.

The upper half of the end bracket is closed to minimize the possibility of dripping liquids or falling solids entering the vital parts of the motor.

Two powerful fans located behind the bearing brackets draw cooling air through the bearing bracket openings, around the bearings, across the windings and to the air passages between the outer surfaces of the magnetic core and the frame—the heated air being expelled through openings at the side and bottom of the frame.

Century Form J Motor

Crown Block for Portable Rigs

BAASH-ROSS TOOL COMPANY

Baash-Ross Tool Company, 5512 Boyle Avenue, Los Angeles 11, California, has developed a crown block which incorporates important advantages to portable rig operation. The block is so designed that simple over-and-over reaving of the drilling line is made possible. This feature insures the traveling block rising and falling vertically without drift or "fleet angle," an important improvement in the cramped quarters of portable masts.

All sheaves of the new block are mounted in line, so that all lines are parallel and in the same plane as they feed to and from the block, a feature which eliminates pull-back from the center of the hole and reduces the risk of striking the inside bracing of the rig or finger board. Pipe handling is thus made easier with the block, since the derrick man does not have to contend with a twisting block when catching pipe, and the floor men do not have to work against the pipe swinging off center.

Two styles are available, type DCO and DCS. Type DCO is made for rigs where the fast line comes down to the drawworks on the outside of the rig. Type DCS is designed for use where the fast line comes down the inside of the derrick. In type DCO, the fast line sheave is larger in diameter than the others, and is mounted eccentrically with respect to the bearing shaft of the other sheaves.

This maintains the inline feature of all sheaves on the inside, but offsets the larger sheave on the back side sufficiently to carry the fast line outside the derrick without use of auxiliary sheaves or complicated reaving. The fast line operates on this larger sheave, thus reducing the rotational speed of the fast line sheave instead of increasing it as with conventional auxiliary sheave arrangements.

The larger sheave is tangent to the others on the deadline side, yet is sufficiently offset to carry the fast line completely clear of the derrick and down to the drawworks.

Another important feature of the block is its unit-built design, which assures simplicity of installation and rigid sheave alignment. The tool can be quickly installed and removed as a unit. In addition, direct abutment of the inner bearing races serves to space the sheaves, and the conventional spacer plates are thus eliminated. This permits all crown-block sheaves to be mounted with the same relative spacing as the traveling block so that lines do not fan out between them.

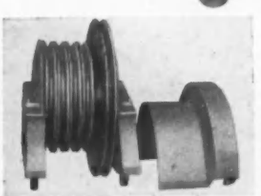


Figure 1. ABOVE BLOCK WITH COVER REMOVED SHOWING OFFSET ARRANGEMENT OF SHEAVE FOR OUTSIDE FAST LINE.

Figure 2. STRAIGHT-IN-LINE BLOCK FOR RIGS WITH FAST LINE INSIDE.

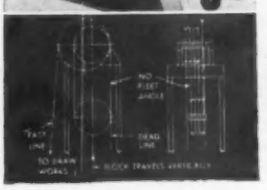


Figure 3. SHOWING ARRANGEMENT OF BAASH-ROSS TYPE DCO. CROWN BLOCK.

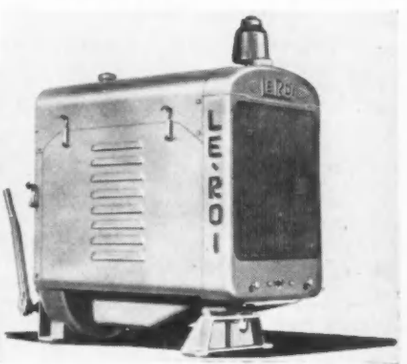
Heavy-Duty Engine

LE ROI COMPANY

Le Roi Company, 1706 S. 68th Street, Milwaukee 14, Wisconsin, announces a new four-cylinder, valve-in-head engine, Model D140.

This engine has a piston displacement of 140 cubic inches and develops up to 33 horsepower at 2400 RPM. Special features include a drop-forged, counterweighted crankshaft, extra-large main bearings, vertical magneto, drop-forged connecting rods, precision bearings, oil-bath air cleaner, valve seat inserts, full pressure lubrication, and conveniently located controls.

The outfit is completely housed and so designed that it makes a modern, compact power unit. Rugged construction, accessibility, and simplicity of design are so incorporated in the engine that according to the manufacturers, the result is a heavy-duty engine of wide application, economical to operate, easy to maintain, and capable of continuous service and long life.



Le Roi Model D140

Cleaner

TECHNICAL PROCESSES DIVISION OF COLONIAL ALLOYS COMPANY

Technical Processes Division of Colonial Alloys Company, Colonial Philadelphia Building, Philadelphia 34, Pennsylvania, announces an emulsifiable type cleaner designed for quick removal of oils and solid particle dirts and greases, especially those which are very hard and caked on.

This cleaner is recommended for metals in general, trucks, tractors, large machines and parts or assemblies prior to repairs or refinishing.

"Running Gear," as the cleaner is called, is mixed 1 part with from three to 10 parts of kerosine or common mineral spirits, depending upon the severity of the cleaning job at hand.

The material is used at room or higher temperature up to 90° F. and is either sprayed on the object to be cleaned, or the object is dipped in a tank of the solution.

Emulsification will take place, dirts and greases will be loosened and suspended, and can be flushed off with a pressure hose or water dip.

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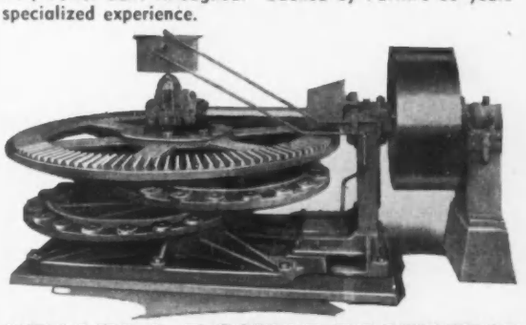

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By PHILIP B. KING

Geologist, Geological Survey, United States Department of the Interior, Washington, D. C.

PUBLISHED BY PERMISSION OF THE DIRECTOR OF THE GEOLOGICAL SURVEY AND OF THE SECRETARY OF THE GEOLOGICAL SOCIETY OF AMERICA.

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FOREWORD BY RONALD K. DeFORD AND E. RUSSELL LLOYD

CONTENTS

Chapter One—Introduction
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Men in the Industry's News

M. A. WRIGHT has been appointed assistant to J. R. McWilliams, manager of production for The Carter Oil Company, at Tulsa. Wright moves to Tulsa from Louisiana where he has been division engineer of the southern division for the company.

E. R. SHAW, former personnel manager for The Carter Oil Company in the Eastern division, has been transferred from St. Elmo, Illinois, to Tulsa where he will act in a similar capacity.

R. D. PATTON, Wilcox Oil & Gas Company, Oklahoma City, has resigned to direct the geological staff of Falcon Seaboard Drilling Company, Tulsa.

C. E. OLMSTED, vice president of The Texas Company, New York, has announced consolidation of that company's export sales and foreign producing departments into a foreign operations unit, an executive division having been created, with W. F. Moore and W. H. Borie as assistants to the vice president. Harris T. Dodge, former assistant general manager of the export sales department, becomes manager of foreign sales.

LLOYD N. HAMILTON, who until about a year ago was president of Standard Oil Company of British Columbia and a resident of Vancouver, and has since been in Washington, has been elected a director of Bahrein Petroleum Company, Ltd., and California Texas Oil Company, and chairman of the board of the Bahrein Petroleum Company Ltd. Both companies are jointly owned by Standard Oil Company of California and The Texas Company. He will have offices in the Chrysler Building in New York.

A. ROGERS DENISON, president of the American Association of Petroleum Geologists, discussed association affairs and particularly, the work of the war service committee, before a meeting of Tulsa Geological Society November 22.

MILTON UNGER, veteran operator in West Texas shallow pools, has transferred headquarters from Bakersfield to Midland.

HARVEY D. CARTER, director of the PAW supply division, has been forced to resign because of illness. No successor has yet been named. Carter joined PAW last July 1, when he became director of supply for District 1. He is president and managing partner of Oil Trading Company and president of South Shore Oil and Developmnt Company, both of New York.

SAMUEL F. PRATT, general secretary of Pennsylvania Grade Crude Oil Association, has resigned, effective January 1.

He joined the association as a field service division representative in November, 1932, and was stationed in St. Louis and Philadelphia until 1935. At that time he was transferred to Oil City as manager of the field service division. The following year he was sent to London as European manager and remained overseas until shortly before the outbreak of the war. He returned in 1939 and was appointed assistant executive manager. Following the death of J. E. Moorhead in August of last year, Pratt was appointed general secretary.

V. W. MITCHELL has been placed in charge of the new Republic Supply Company store at 221 South West Street, Jackson, Mississippi.

ROBERT T. DUNLAP has been appointed assistant to the president of Wickwire Spencer Steel Company. Dunlap, an authority in the steel industry on plant installations, production and operation, was formerly general works manager of the Vulcan Iron Works, and has also been associated with the Elliott Company as production superintendent, with Jones & Laughlin Steel Corporation as engineer, production and general superintendent, and with the Pittsburgh Bridge and Iron Works as plant manager. He will be located at the company's home office in New York.

JAMES HARVE WEST, 73, president of H. Y. Oil Company and owner of extensive oil properties in West Central Texas, died November 19 while visiting his son, J. F. West, at Stamford, Texas. He had resided at San Diego, California, the past several years. His entire business life was devoted to the drilling and producing branch of the industry, having started at Bradford, Pennsylvania, as a youth, later operating in Mid-Western states before settling in Texas.

Advertisers' Index

*Indicates detailed information on products and services included in 1942 edition of Composite Catalog of Oil Field and Pipe-Line Equipment.

*Acme Fishing Tool Co. 71
American Association of Petroleum Geologists 72
American Photocopy Equipment Co. 59
*American Sand-Banum Co. 72
The American Well & Prospecting Co. 3
Wm. M. Barret, Inc. 68
*Bethlehem Supply Co. 25
*Broderick & Bascom Rope Co. I Cover
*Brown Oil Tools, Inc. 38
*Cameron Iron Works, Inc. III Cover
*Cardwell Manufacturing Co. 17
The Continental Supply Co. 6
*Dresser Manufacturing Co. 29
Ft. Worth Laboratories 68
General American Transportation Corp. 59
*Grizzly Manufacturing Co. 31
Gulf Engineering Co. 38
Gulf Oil Corp. 65
Harrison Equipment Co. 38
*Haynes Stellite Co. 57
Hill & Hill 68
Houston Laboratories 68
*Hughes Tool Co. IV Cover
*International Harvester Co. 35
*The Jeffrey Manufacturing Co. 69
*Kerotest Manufacturing Co. 1
Ladish Drop Forge Co. 33
Levingston Shipbuilding Co. II Cover
*Maloney Tank Manufacturing Co. 4
*Mission Manufacturing Co. 49
National Bank of Tulsa 53
The National Supply Co. 18-19
*Oil City Brass Works, Inc. 58
Oil Field Salvage Co. 71
*Patterson-Ballagh Corp. 21
*Pattin Brothers Division Acme Fishing Tool Co. 71
*Pelican Well Tool & Supply Co. 60
Pesco Products Co. 39
*Raybestos-Manhattan, Inc. 61
*Reed Roller Bit Co. 36-37
Roosevelt Hotel 69
*Schlumberger Well Surveying Corp. 27
*Sperry-Sun Well Surveying Co. 71
*Standco Brake Lining Co. 68
Sterling Packing & Gasket Co. 58
Texas Electric Steel Casting Co. 2
*Tretolite Co. 40
*Union Carbide and Carbon Corp. 57
*Waukesha Motor Co. 23
Wilson Electrical Equipment Co. 62
Wilson Supply Co. 54